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U.S. Department
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**Federal Aviation
Administration**

# Flight Services

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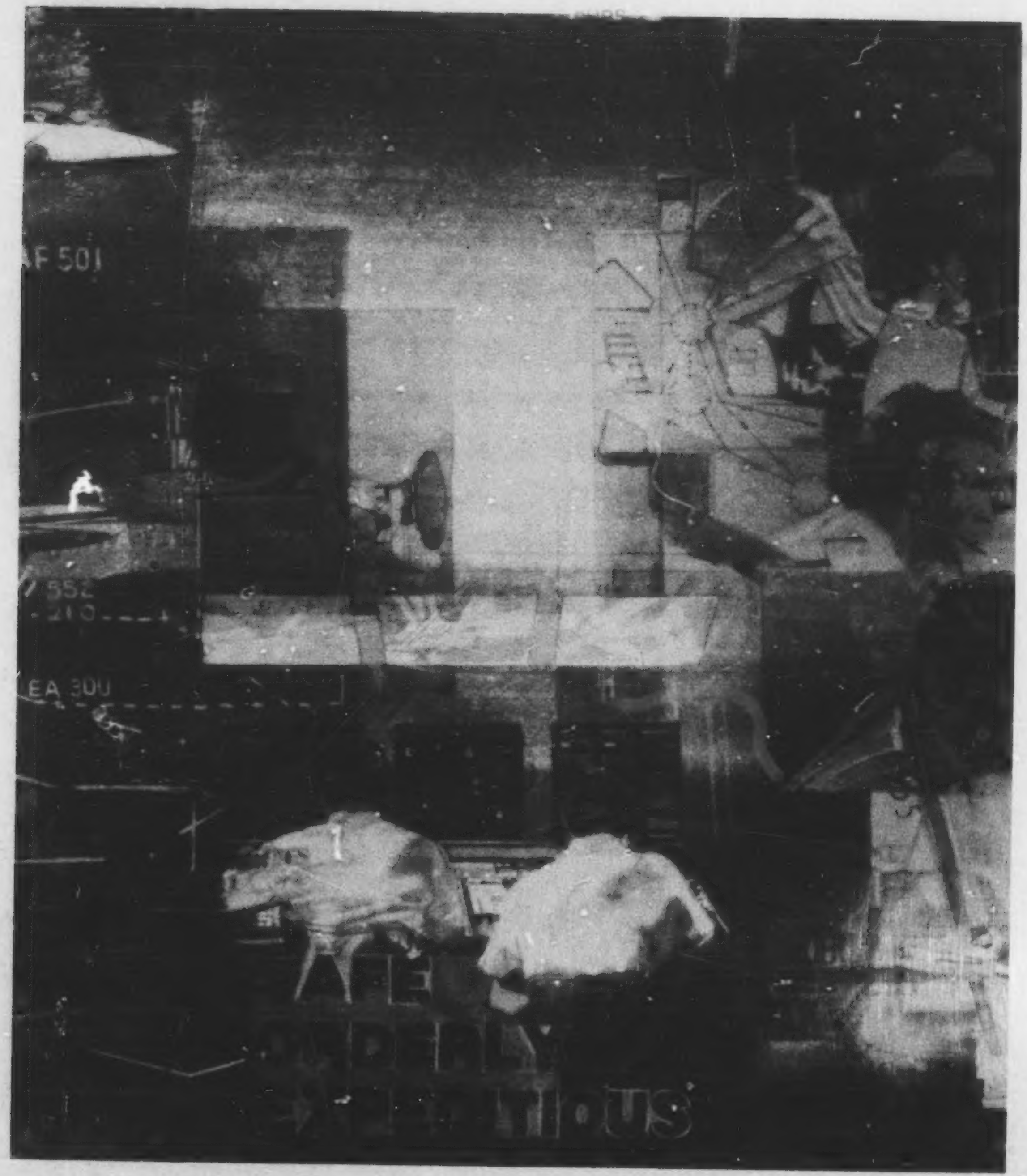
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**Air Traffic Service
7110.10H**

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# FLIGHT SERVICE STATION PROCEDURES

# 7110.10H

## FOREWORD

This handbook prescribes procedures and phraseology for use by personnel providing flight assistance services. Flight Service Station specialists are required to be familiar with the provisions of this handbook which pertain to their operational responsibilities and to exercise their best judgment if they encounter situations not covered by it.

David J Peterson

for John R. Ryan
Director, Air Traffic
Operations Service

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## BACKGROUND

Task Group 3-3.1 of the NAR convened in Washington, D. C. in August of 1984. The purpose of the Task Group was to conduct a review of the existing Flight Services Handbook (7110.10), to reformat, reorganize, simplify and consolidate procedures into a more functional, logical, and easier to use handbook. The revised handbook (7110.10H) is the result of that effort.

Information from other sources incorporated into this revision are 7110.80B, Data Communications, 7210.3G Facility Administration and Operation and 7930.2A Notices to Airmen. The information in Handbook 7110.10H is reorganized into a more logical sequence in nine chapters and five appendices. A brief explanation of chapter content follows.

## CHAPTER DEVELOPMENT

**CHAPTER 1, INTRODUCTION** Eliminates the existing abbreviations and references Handbook 7340.1, Contractions. Appendix E, SOP for Transfer of Position Responsibility, is grouped with existing paragraph 9 and retitled Duty Familiarization and Transfer of Position Responsibility. Other items in the chapter remain largely intact.

**CHAPTER 2, BROADCAST PROCEDURES.** Much of existing Chapter 5, Sections 3, 4, 5, and 6 as well as some Alert Notice (ALNOT) phraseology are included in Unscheduled Broadcasts. The Transcribed Weather Broadcast (TWEB) section is modified. The Density Altitude table from 7210.3 is included in the TWEB section. Some title names changed in the section on Pilot Automatic Telephone Weather Answering Service (PATWAS) to better reflect the informaation in the paragraphs. Information on Scheduled Weather Broadcasts (SWB) (Alaska only) is moved to the end of the new chapter.

**CHAPTER 3, PILOT BRIEFING** Since pilot briefings include preflight and in-flight, both were included as new sections rather than separate chapters.

**CHAPTER 4, IN-FLIGHT SERVICES** This chapter contains information from existing sections titled Radio and Interphone Communications, Monitoring, Strip Marking Airport Advisory Service (AAS) and Enroute Flight Advisory Service (EFAS). Integrated with the new Section 2 on Radio Communications is existing Appendix B, Millibar Conversion Chart. Appendix C, Weather Display Symbols is also included in this chapter.

A reference to SVFR is included in the AAS section to provide detailed procedures on SVFR in a separate section.

**CHAPTER 5, EMERGENCY SERVICES** This includes an expanded section on Emergency orientation. In addition to DF services, the handbook now contains procedures and phraseology on VOR and VOR/ADF orientations. The chapter also includes information on SCATANA. Information on Explosive Detection Dog Handling Teams is extracted from Handbook 7210.3 and combined with similar information in the revised 7110.10H.

**CHAPTER 6 FLIGHT DATA** This chapter contains information for the existing Flight Handling chapter regarding IFR and VFR flight plan handling and military flight plan handling and operations. Also included are Law Enforcement Messages (new Section 5), and (Service B Circuit Drawing M59) and Appendix E (Q Signals for Use on the Domestic Teletypewriter Circuits) from Handbook 7110.80 as appendices B an C in the revised 7110.10H.

**CHAPTER 7 INTERNATIONAL OPERATIONS** This chapter is new and includes both international procedure (ICAO) as well as transborder information, such as movement and control messages for both Canada and Mexico.

**CHAPTER 8 SEARCH AND RESCUE PROCEDURES (SAR) FOR VFR AIRCRAFT** Contains mostly information from the old section on SAR. The data is divided into five sections to make it easier to locate.

**CHAPTER 9 AVIATION WEATHER SERVICES** Includes much of the information from Handbook 7110.80, Chapter 5, Service A Data Message Formats, and the PIREPS section of the old 7110.10.

## FIELD INPUT

Field input played a major role in the development of this handbook. Input was received from all regions and represented concerns of all activity level facilities. These comments were assembled into packages and reviewed both by individual members and by the entire group. Comments received from this circulation were reviewed, considered, and where appropriate,, incorporated into a final draft handbook which was again circulated to the regional offices for comments.

The final handbook is the combined results of and initial field input, the collective work of the Task Group, and two subsequent field comment periods.

## APPENDIX A. PILOT CONTROLLER GLOSSARY

**Approach Gate.** Modifies the definition to locate the gate with reference to the outer marker for precision approaches. (ATO-320)

**Controlled Departure Time (CDT) Programs.** Adds a new definition. (ATO-320)

**Expected Departure Clearance Time (EDCT)** Adds a new definition. (ATO-300)

**Fuel Advisory** Deletes the definition. (ATO-300)

**Glidepath, PAR.** Deletes the definition. (ATO-320)

**Glideslope/Glidepath—3. PAR.** Ground Delay. Adds a new definition. (ATO-300)

**Hold for Release.** Adds a new definition. (ATO-300)

**Release Time.** Revises the definition. (ATO-300)

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# Chapter 1. INTRODUCTION

## Section 1. GENERAL

### 1-1. PURPOSE

This handbook prescribes procedures and phraseology for use by personnel providing flight assistance services.

### 1-2. DISTRIBUTION

This Order is distributed to selected offices in Washington Headquarters, Regional Headquarters, Area Offices, FAA Technical Center, and Aeronautical Center. Copies to all Air Traffic Facilities; all International Aviation Field Offices; General Aviation, Air Carrier and Flight Standards District Offices; and interested aviation public.

### 1-3. CANCELLATIONS

Flight Services Handbook 7110.10G and changes thereto are cancelled.

### 1-4. EXPLANATION OF CHANGES

Significant changes included are listed below. This edition includes Service B GENOTs through 5-224.

**a.** 4-72 provides strip marking guidance to comply with the change in paragraph 6-2.

**b.** 4-74 deletes the symbol "B" for *base leg* to coincide with the symbology in Handbook 7110.65.

**c.** 6-2 allows specialists to comply with pilot's request to activate a flight plan regardless of the actual time of departure.

### 1-5. EFFECTIVE DATE

**a.** This handbook is effective May 8, 1986.

**b.** Changes are scheduled every 112 days.

Change 1 — August 28, 1986.

**c.** If Changes/Handbooks are not received at least 30 days prior to effective dates, facilities shall notify the Airspace, Rules and Aeronautical Information Division (ATO-200) by telephone on:

1. Federal Telecommunications System (FTS) 8-426-8948 or 8790.

2. Commercial 202-426-8948 or 8790.

### 1-6. thru 1-19. RESERVED

## Section 2. TERMS OF REFERENCE

### 1-20. WORD MEANINGS

As used in this manual, the following have the meaning shown:

**a.** "Shall," or an action verb in the imperative sense, means a procedure is mandatory.

**b.** "Should," means a procedure is recommended.

**c.** "May" or "need not," means a procedure is optional.

**d.** "Will," means futurity, not a requirement for application of a procedure.

**e.** Singular words include the plural.

**f.** Plural words include the singular.

**g.** "Aircraft" means the airframe, crew members, or both.

**h.** "Altitude," means altitude mean sea level, flight levels or both.

**i.** "Miles" means nautical miles unless otherwise specified, and means statute miles in conjunction with visibility.

**h.** "Time" when used in the context of a clock reading is the hour in Coordinated Universal Time (UTC) or the local equivalent as appropriate, and the minutes. Change to the next minute is made at the minute plus 30-second point, except for time checks or when closing a scheduled weather broadcast which are given to the nearest quarter minute.

### 1-21. NOTES

Statements of fact, of a prefatory or explanatory nature and relating to the use of directive material, have been identified and worded as "Notes."

### 1-22. 7110.10H CHANGES

When revised, reprinted, or additional pages are issued, they will be marked as follows:

**a.** Each revised or additional page will show the change number and effective date of the change.

**b.** Bold lines in the margin of the text will mark the location of substantive procedural, operational or policy changes; i.e., when material which affects the performance of duty is added, revised or deleted.

**c.** The legend "Editorial Changes" at the bottom of the page will indicate that revisions have been made which do not change the intent of the text or affect performance of duty. This may include changes in wording, numbering of paragraphs or pages, and page make-up. When both editorial and substantive changes occur on a page, this legend will not appear.

**d.** A reprinted page not requiring change as noted in **b.** or **c.** will be reproduced in its original format with no change to date or change number.

### 1-23. ABBREVIATIONS

Abbreviations authorized for use in the application of the procedures in this handbook are those contained in Order 7340.1, Contractions handbook.

### 1-24. thru 1-29. RESERVED

# Section 3. RESPONSIBILITY

## 1-30. SCOPE

Air Traffic personnel assigned to facilities providing flight service functions shall be familiar with the provisions of this handbook which pertain to their operational responsibilities.

## 1-31. PROCEDURAL APPLICATIONS

Apply the procedures in this handbook except when other procedures are contained in a Letter of Agreement, or other appropriate FAA document, provided they only supplement this handbook and any standards they specify are not less than those in this handbook.

**Note 1.** — Pilots are required to abide by applicable provisions of FAR or any other pertinent regulations, regardless of the application of any procedure in this handbook.

**Note 2.** — The Facility Operation and Administration Handbook contains administrative instructions pertaining to these letters and documents. Persons or agencies interested in negotiating these letters or documents can do so by contacting the appropriate Flight Service Station.

**Note 3.** — Flight Service Station personnel should submit recommended changes directly to their nearest regional FSSCOM Committee member.

**Note 4.** — Procedures for Scheduled Weather Broadcast (SWB) apply only in Alaska.

## 1-32. DUTY PRIORITY

**a.** Because there are many variables involved, it is impossible to provide a standard list of duty priorities that apply to every situation. Each set of circumstances must be evaluated on its own merit and, when more than one action is required, personnel shall exercise their best judgment based on the facts and circumstances known to them. Action which appears most critical from a safety standpoint should be performed first.

**b.** Emergency situations are those where life or property is in immediate danger. Inflight services are those provided to or affecting aircraft in flight or otherwise operating on the airport surface. This includes services to airborne aircraft such as NAVAID monitoring and restoration, AAS, delivery of ATC clearances, advisories or requests, issuance of military flight advisory messages, EFAS, NOTAM's, SAR communications searches, transcribed or live broadcasts, weather observations, PIREP's and radio pilot briefings. Preflight services are those which directly affect aircraft operations but which are provided prior to actual departure and usually by telephone. This includes pilot briefings, flight plan filing/processing, and aircraft operational reservations.

**c.** During peak activity periods, duties may conflict occasionally. When this occurs, personnel shall use good judgment based on the requirements of the situation at hand and, in general, be guided by the following order of duty priorities:

1. Emergency Situations
2. Inflight Services
3. Preflight Services

## 1-33. DUTY FAMILIARIZATION AND TRANSFER OF POSITION RESPONSIBILITY

The transfer of position responsibility shall be accomplished in accordance with the Standard Operating Practice (SOP) for the Transfer of Position Responsibility and appropriate facility directives each time the operational responsibility for a position is transferred from one specialist to another.

### a. PURPOSE.

This appendix prescribes the method and step-by-step process for conducting a position relief briefing and transferring position responsibility from one specialist to another.

### b. DISCUSSION.

In all operational facilities, the increase in traffic density and the need for the expeditious movement of air traffic without compromising safety have emphasized the importance of the position relief process. The contents, methods, and practices used for position relief and briefing vary among personnel and pertinent information is often forgotten or incompletely covered. Major problems occur whenever there is a heavy reliance upon memory unsupported by routines or systematic reminders. This SOP addresses the complete task of transferring position responsibility and the associated relief briefing.

Position relief unavoidably provides workload for specialists at the time of relief. The intent of this SOP is to make the transfer of position responsibility take place smoothly and to ensure a complete transfer of information with a minimum amount of workload. The method takes advantage of a self-briefing concept in which the relieving specialist obtains needed status information by reading from the Status Information Area(s) to begin the relief process. Up to the minute information relating to the provision of flight services to pilots and aircraft in-flight requires verbal exchanges between specialists during the relief process. The method also specifies the point when the transfer of position responsibility occurs.

In the final part of the relief process, the specialist being relieved monitors and reviews the position to ensure that nothing has been overlooked or incorrectly displayed and that the transfer of position responsibility occurred with a complete briefing.

**c. TERMS.**

The following terms are important for a complete understanding of this SOP:

—*Status Information Area(s).* Manual or automatic displays of the current status of position related equipment and operational conditions or procedures.

—*Written Notes.* Manual recorded items of information kept at designated locations on the position of operation. They are an element of Status Information Areas.

—*Checklist.* An ordered listing of items to be covered in a position relief.

**d. PRECAUTIONS.**

**1.** Specialists involved in the position relief process should not rush or be influenced to rush.

**2.** During position operation, each item of status information which is or may be an operational factor for the relieving specialist should be recorded as soon as it is operationally feasible so that it will not be forgotten or incorrectly recorded.

**3.** Extra care should be taken when more than one specialist relieves or is being relieved from a position at the same time (e.g., combining or decombining positions).

**e. RESPONSIBILITIES.**

**1.** The specialist being relieved shall be responsible for ensuring that any pertinent status information of which he/she is aware is relayed to the relieving specialist and is either:

(a) Accurately displayed in the Status Information Area(s) for which he/she has responsibility, or

(b) Relayed to the position having responsibility for accurately displaying the status information. The relieving specialist shall be responsible for ensuring that, prior to accepting responsibility for the position, any unresolved questions pertaining to the operation of the position are resolved. The relieving specialist and the specialist being relieved shall share equal responsibility for the completeness and accuracy of the position relief briefing. The specialists engaged in a position relief shall conduct the relief process at the position being relieved unless other procedures have been established and authorized by the facility Air Traffic Manager.

**f. STEP BY STEP PROCESS.**

1. PREVIEW THE POSITION

*Relieving Specialist*

(a) Follow checklist and review the Status information Area(s). (Note. — This sub-step may be replaced by an authorized pre-position briefing provided an equivalent review of checklist items is accomplished.)

(b) Observe position equipment, operational situation, and the work environment.

(c) Listen to voice communications and observe other operational actions.

(d) Observe current and pending aircraft and vehicular traffic and correlate with flight and other movement information.

(e) Indicate to the specialist being relieved that the position has been previewed and that the verbal briefing may begin.

**1-33f1. Note.—** Sub-steps b, c, and d may be conducted concurrently or in order.

2. VERBAL BRIEFING

*Specialist Being Relieved*

(a) Brief the relieving specialist on the abnormal status of items not listed on the Status Information Area(s) as well as on any items of special operational interest calling for verbal explanation or additional discussion.

(b) Brief on TRAFFIC, if applicable.

*Relieving Specialist*

(c) Ask questions necessary to ensure a complete understanding of the operations situation.

*Specialist Being Relieved*

(d) Completely answer any questions asked.

3. ASSUMPTION OF POSITION RESPONSIBILITY

*Relieving Specialist*

(a) Make a statement or otherwise indicate to the specialist being relieved that position responsibility has been assumed.

*Specialist Being Relieved*

(b) Release the position to the relieving specialist.

4. REVIEW THE POSITION

*Relieving Specialist*

(a) Sign on the position unless a facility directive authorized sub-step h below.

(b) Check, verify, and update the information obtained in steps (1) and (2).

(c) Check position equipment in accordance with existing directives.

*Specialist Being Relieved*

(d) Review checklist, Status Information Area(s), written notes, and other prescibed sources of information and advise the relieving specialist of known omissions, updates, or inaccuracies.

(e) Observe overall position operation to determine if assistance is needed.

(f) If assistance is needed, provide or summon it as appropriate.

(g) Advise the appropriate position regarding known Status Information Area(s) omissions, update, or inaccuracies.

(h) Sign the relieving specialist on the position if appropriate.

(i) Sign off the position in accordance with existing directives or otherwise indicate that the relief process is complete.

**1-33. Reference—** FAA Handbook 7210.3, paragraphs 222, 223, and 224.

## 1-34. thru 1-39. RESERVED

# Chapter 2. BROADCAST PROCEDURES

## Section 1. GENERAL

### 2-1. TYPES OF BROADCASTS

Weather and flight information shall be broadcast by one or more of the following broadcast categories:

**a.** Unscheduled broadcasts.

**b.** Weather advisory (WST, WS, WA, CWA, AWW,) broadcast.

**c.** Transcribed weather broadcast (TWEB).

**d.** Pilots Automatic Telephone Weather Answering Service (PATWAS).

**e.** Scheduled weather broadcast (SWB) — *Alaska.*

### 2-2. SPEECH RATE

Surface weather reports shall be spoken at a rate of 100 words-per-minute. All other data shall be spoken at a rate of 120 words-per-minute.

### 2-3. INTERRUPTION OF BROADCAST

Interrupt broadcast only when you believe that an aircraft requires immediate attention; e.g., to issue an airport advisory. When an aircraft calls during a broadcast:

**a.** Broadcast for a short interval on the frequency to which the pilot is listening simultaneously with the broadcast frequencies, and complete the aircraft contact immediately after the broadcast.

**b.** If the pilot repeats the call, interrupt the broadcast and answer the call.

### 2-4. BROADCAST NOTAMS

Broadcast all NOTAM (D) containing information not carried in the Notices to Airmen (Class II) Publication, for those locations whose hourly weather reports are broadcast as part of the SWB. Broadcast NOTAM (L) for the local station only.

**Note. —** Landing area information for those airports served by a control tower during the hours the tower is in operation shall not be included in the scheduled or unscheduled broadcasts of the tie-in FSS.

### 2-5. ANNOUNCING MISSING ITEMS

Announce the word "missing" when the letter "M" (or two dashes in a report from an automatic weather reporting station) appears in place of any items or component of a weather report, or in place of unreadable or obviously incorrect items or portions of weather reports. When appropriate, instead of speaking the name of several locations with missing reports, announce: "other scheduled reports missing."

### 2-6. WEATHER REPORT PHRASEOLOGY

The weather report entered in the hourly sequence collection is current until superseded by a special or local observation, or the next hourly report.

**a.** Announce the location of the observation as follows:

1. The geographical location name (not the identifier), twice for SWB, once for other broadcasts.

**Examples —**

FRONT ROYAL, FRONT ROYAL,...ETC. (SWB)

"FRONT ROYAL, ...ETC." (other Broadcasts)

2. When the location name is duplicated within 500 miles, follow the location name with the state name.

**Examples —**

"COLUMBUS, COLUMBUS, OHIO,...ETC." (SWB)

3. When weather reports originate at more than one airport at the same geographical location, identify the airport.

**Examples —**

"CHICAGO, CHICAGO O'HARE, ...ETC."

"CHICAGO, CHICAGO MIDWAY, ...ETC." (SWB)

"CHICAGO O'HARE, ...ETC."

"CHICAGO MIDWAY, ...ETC." (other Broadcasts)

4. Where it is considered necessary and a request is received from the military base commander to broadcast the weather reports originating at the base and the controlling military agency.

**Example. —**

"CAIRNS, CAIRNS ARMY AIR FIELD"

"ANDREWS, ANDREWS AIR FORCE BASE" (SWB)

**b.** State the height and character of sky coverage data as follows:

1. In the same order of ascending height in which they appear in the weather report.

2. Do not say the word "clouds."

3. Announce ceiling designators as follows:

| Designator | Say |
|---|---|
| M | MEASURED CEILING |
| E | ESTIMATED CEILING |
| W | INDEFINITE CEILING |

4. State heights in hundreds and/or thousands of feet.

**Examples. —**

|  |  |
|---|---|
| 3 | THREE HUNDRED |
| 18 | ONE THOUSAND EIGHT HUNDRED |
| 200 | TWO ZERO THOUSAND |

5. Announce cloud contractions as follows:

| Symbol | Say |
|---|---|
| CLR | CLEAR |
| SCT | SCATTERED |
| BKN | BROKEN |
| OVC | OVERCAST |

6. When a dash precedes a cloud contraction, say the word "thin."

**Example. —**

| Symbol | Say |
|---|---|
| 7-BKN | SEVEN HUNDRED THIN BROKEN |

7. In reports obtained from an AMOS station when the sky conditions are reported in the group added by observer, broadcast it in the usual order for standard manual observations. When the sky condition is not reported, announce "sky condition missing."

8. Announce a ceiling height indicated by the figure "0" as "zero."

9. Announce a condition indicated by "X" or "-X" as:

| Symbol | Say |
|---|---|
| X | SKY OBSCURED |
| -X | SKY PARTIALLY OBSCURED |

10. Announce sky and ceiling conditions (not all possible combinations of phenomena are included) in accordance with the following:

**Examples. —**

| Contractions | Say |
|---|---|
| -X M10 BKN 50 BKN | "Sky partially obscured, measured ceiling one thousand broken, five thousand broken." |
| 20 SCT E30 BKN 250 BKN | "Two thousand scattered, estimated ceiling three thousand broken, two five thousand broken." |
| M10 BKN 50 BKN 300 OVC | "Measured ceiling one thousand broken, five thousand broken, three zero thousand overcast." |
| 10 SCT 50 SCT 200 SCT | "One thousand scattered, five thousand scattered, two zero thousand scattered." |
| W6X | Indefinite ceiling six hundred, sky obscured." |
| -X M5 OVC | "Sky partially obscured, measured ceiling five hundred overcast." |
| 5 -BKN | "Five hundred thin broken." |
| -X 10 -BKN 50 -OVC | "Sky partially obscured, one thousand thin broken, five thousand thin overcast." |
| 10 -SCT E20 BKN | "One thousand thin scattered, estimated ceiling two thousand broken." |
| 20 SCT E250 OVC | "Two thousand scattered, estimated ceiling two five thousand overcast." |
| M10V BKN | "Measured one thousand variable broken." |

**c.** Announce visibility as follows:

**Note. —** When visibility is less than 3 miles and variable, this information is reported in remarks.

| Reading | Say |
|---|---|
| 1/16 | VISIBILITY ONE SIXTEENTH |
| 1/8 | VISIBILITY ONE EIGHTH |
| 3/4 | VISIBILITY THREE QUARTERS |
| 11/2V | VISIBILITY ONE AND ONE-HALF VARIABLE |
| 6 | VISIBILITY SIX |
| 15 | VISIBILITY ONE FIVE |

**d.** Announce atmospheric phenomena and obstructions to vision appearing in a weather report. Convert the symbols as follows:

| Symbols | Say |
|---|---|
| + | HEAVY |
| - | LIGHT |
| T | THUNDERSTORM |
| R | RAIN |
| RW | RAIN SHOWERS |
| ZR | FREEZING RAIN |
| L | DRIZZLE |
| ZL | FREEZING DRIZZLE |
| T+ | SEVERE THUNDERSTORMS |
| S | SNOW |
| SP | SNOW PELLETS |
| SG | SNOW GRAINS |
| IC | ICE CRYSTALS |
| A | HAIL |
| IP | ICE PELLETS |
| F | FOG |
| GF | GROUND FOG |
| IF | ICE FOG |
| BD | BLOWING DUST |
| BN | BLOWING SAND |
| BS | BLOWING SNOW |
| BY | BLOWING SPRAY |
| H | HAZE |
| K | SMOKE |
| D | DUST |

**Note. —** Absence of any intensity symbol indicates condition to be moderate.

**e.** Announce temperature and dew point in accordance with the following:

1. In degrees Fahrenheit.

2. Below zero Fahrenheit values by prefixing the temperature with the word "minus."

**Example. —**

| Reading | Say |
|---|---|
| 37/36 | TEMPERATURE THREE SEVEN, DEW POINT THREE SIX |
| 104/99 | TEMPERATURE ONE ZERO FOUR, DEW POINT NINER NINER |
| 2/-3 | TEMPERATURE TWO, DEW POINT MINUS THREE |

**f.** Announce wind direction and speed as follows:

1. State the word "wind" followed by separate digits of the indicated wind direction to the nearest 10-degree multiple, and the separate digits of the indicated velocity in knots.

**Example. —**

"WIND, THREE SIX ZERO AT FOUR ZERO."

2. Omit the words "magnetic," "true," or "knots."

3. Announce a north wind as "three six zero," rather than "zero zero zero."

4. Read other than local wind direction as it appears in the report; i.e., "true" rather than "magnetic."

5. If any element of the wind is estimated, state the words "wind estimated" prior to the direction.

**Example. —**

"WIND, ESTIMATED ZERO THREE ZERO AT ONE FOUR, PEAK GUSTS TWO FIVE."

6. Whenever the speed of gusts or squalls is reported announce this immediately following the average wind value.

**Example. —**

"WIND, TWO THREE ZERO AT TWO FIVE, PEAK GUSTS THREE FIVE."

"WIND ONE EIGHT ZERO AT FOUR FIVE, PEAK GUSTS IN SQUALLS, FIVE FIVE."

**g.** Announce each of the 4 digits of the altimeter setting

**h.** Announce remarks and NOTAM's included in weather reports. Do not include additive data intended primarily for the preparation of forecast maps. Announce as follows:

REMARKS

| | |
|---|---|
| VSBY 1V2 | "Visibility variable between one and two." |
| VSBY NE3 SE2 1/2 SW2 | "Visibility northeast three, southeast two and one-half, southwest two." |
| RO4VV 1/4V1 | "Runway four visibility variable between one quarter and one." |
| R36VV1 1/2+ | "Runway three six visibility more than one and one-half." |
| RVVNO | "R—V—V not available." |

**Note. —** In broadcasting AMOS reports, if the visibility is three miles or more, the tenths are not reported. A missing visibility value is shown by two dashes(—).

| | |
|---|---|
| R18VR40 | "Runway one eight R—V—R four thousand" |
| R16VR10 — | "Runway one six R—V—R less than one thousand" |
| RVRNO | "R—V—R not available" |
| PIREP VSBY ALF (value as stated by pilot) TOP 60 | "Pilot reports visibility aloft (value as stated by pilot) top six thousand" |
| PIREP K LYR 8/10 VSBY (value as stated by pilot) | "Pilot reports smoke layer 8 hundred to one thousand feet. Visibility (value as stated by pilot)" |

—CONTINUED

| | |
|---|---|
| PTCHS GF W N E TWR VSBY 5 GF DEP 30 | "Patches of ground fog west, north, and east" "Tower visibility five, ground fog three zero feet deep" |
| VSBY1V2 | "Visibility variable between one and two" |
| VSBY NE3 SE2 1/2 SW2 | "Visibility northeast three, southeast two and one-half, southwest two" |
| 220 BKN 280/FEW ACSL OVR RDG SW/RE47 | "Broken clouds at two two thousand, tops at two eight thousand. Few standing lenticular altocumulus over ridge southwest" (RE47 not spoken) |
| T OVHD MOVG E B28 FQT LTGCG | "Thunderstorm overhead moving east. (Time begun—H+28—not spoken). Frequent lightning cloud to ground." |
| SCT V BKN | "Scattered layer variable broken" |
| TCU NW | "Towering cumulus northwest" |
| K10 | "Smoke layer one thousand" |

—CONTINUED

| | |
|---|---|
| F6 | "Fog obscuring six-tenths of sky" |
| RWU E | "Rain showers of unknown intensity east" |
| SNOINCR5 | "Snow increased five inches during past hour" |
| S-OCNLY S+ | "Light snow, occasionally heavy" |

"COLUMBUS, OHIO, ...ETC." (other Broadcasts)

"CAIRNS ARMY AIR FIELD"

"ANDREWS AIR FORCE BASE" (other Broadcasts)

## 2-7. OBSOLETE DATA

Do not broadcast obsolete data.

## 2-8. thru 2-9. RESERVED

## Section 2. UNSCHEDULED BROADCASTS

### 2-10. TYPE OF BROADCASTS

Unscheduled broadcasts are those which are necessary due to receipt of special weather reports, PIREP's, Notices to Airmen, weather advisories, radar reports, military training route information, ALNOTs, and other information considered necessary to enhance safety and efficiency of flight.

### 2-11. PRE-BROADCAST ACTION

Upon receipt of a WST, WS, WA, CWA, or AWW pertaining to an area within 150 NM of the FSS or a broadcast facility controlled by your station, record time of receipt, then relay pertinent AIRMET information to the appropriate ATC towers for which you have message delivery responsibility. Adverse conditions may be consolidated into one report when conditions are similar and areas are adjacent.

### 2-12. PHRASEOLOGY AND BROADCAST TIME

Make unscheduled broadcasts as soon as practicable following receipt of the data. If the broadcast cannot be completed at least 3 minutes before H+00, H+15, H+30, or H+45, broadcast the data at these times.

**a.** Special Weather Report — Upon receipt.

*Phraseology:*

AVIATION BROADCAST—Special Weather Report (location name twice)(last two digits of observation time)(weather report).

**b.** AWW and WST—upon receipt and at 15 minute intervals at H+00, H+15, H+30, and H+45.

*Phraseology:*

AVIATION BROADCAST, WEATHER ADVISORY, CONVECTIVE SIGMET (IDENT) (TEXT)

**c.** Thereafter announce an advisory alert at H+ 15 and H+ 45 for the valid period of the advisories. The alert announcement shall consist of advisory identification a very brief statement what the weather is and areas affected.

*Phraseology:*

AVIATION BROADCAST, WEATHER ADVISORY, A (SIGMET) (AIRMET), (CENTER WEATHER ADVISORY), (ETC) IS CURRENT FOR (CONDITIONS).

**Note.** — Although brief, the alert announcement should contain enough information to alert pilots to significant weather conditions occurring or forecast along their route.

**d.** ALNOT— Stations within the ALNOT search area shall broadcast the ALNOT as follows:

1. Immediately after receipt.

2. Transmit at H + 15 for two hours following receipt. If the ALNOT is received during night hours, repeat the announcement at H + 15 for 2 hours following sunrise.

3. **Alaska**—Following opening announcement in the scheduled broadcast, request pilots to standby for the ALNOT.

**Example.** —

"AVIATION BROADCAST, ALERT NOTICE, ATTENTION ALL PILOTS, STAND BY FOR AN ANNOUNCEMENT OF OVERDUE AIRCRAFT AT CONCLUSION OF THIS BROADCAST."

**e.** NOTAMS— NOTAMs meeting the broadcast criteria shall be broadcast immediately upon receipt, except as outlined below.

**1.** *Maintenance Shutdown Notice*—Broadcast a Notice to Airmen immediately preceding a maintenance shutdown and another when service is restored. Make this broadcast on all en route navigational aids controlled by a facility (except those listed under paragraph 2-52), 122.2 MHz, and any other frequency deemed advisable.

**2.** *Important Changes to NAVAIDs*—Broadcast, at H+15 for 12 hours before and 12 hours after, any of the following changes in any NAVAID for which your station has Notice to Airmen responsibility.

(a) Change in frequency or identification.

(b) Relocation or decommissioning of a NAVAID. If the change has not been published in the Notices to Airmen (Class II) Publication for at least seven days preceding the change, continue the broadcast through the seventh day following publication.

**3.** *HIBAL Activity Notice*—Stations that issue NOTAM (L) concerning unmanned free balloon (HIBAL) prelaunch notices shall broadcast this information 15 minutes before the balloon is released. When you are informed that the balloon has been launched, delayed, cancelled or has begun descent, broadcast this information immediately. Additionally, broadcast any balloon position reports or balloon PIREP's received.

**4.** *RAOB Release*—At the ¼ hour before a RAOB balloon is released, broadcast a notice of its impending release and ascension rate.

**5.** *Navaids*— Use plain language and phraseology that will convey the information clearly. Announce NAVAIDs as follows:

| | |
|---|---|
| H,HH,HHH | Radio beacon |
| COMLO | Compass Locator |
| VOR | V-O-R |
| VORTAC | VOR (as in "vortex") — TAC (k) |
| TACAN | TAC(k) AN |
| DME | D-M-E |
| ILS | I-L-S |

**Examples. —**

"Cheyenne, Cheyenne V-O-R out of service."

"Chicago, Chicago VORTAC resumed operation."

**f.** RAREPs— Procedures for handling radar weather data vary according to the location of the individual FSS in relation to the NWS facility, as follows:

**1.** FSS's not having access to local RAREP's, broadcast upon receipt those Service A SPL RAREP's which are less than 1 hour old and are of significance to their flight service area.

**2.** FSS's that receive local RAREP's:

(a) Broadcast SPL RAREP's upon receipt.

(b) Broadcast routine RAREP's upon receipt and at H+00, H+15, H+30 and H+45.

**3.** FSS's providing radar weather advisory service (i.e., equipped with a repeater scope):

(a) Summarize observed data in each unscheduled broadcast.

(b) Refer to the local NWS RAREP's to determine the intensity, tops, etc., of observed echoes.

Do not broadcast those portions of RAREP's containing information on the location of a hurricane eye. These reports begin with the identifying words "eye" or "center."

Following is an example of a RAREP as it appears on a teletypewriter message, and as it is broadcast:

**Example. —**

ICT 0135 LN8TRW+/+ 311/50 190/10 20W 2325 CELLS 1828 MT 350 AT 270/20 HJ231 II3332 JH23333 KJ23346 LI11123

"WICHITA, WICHITA, RADAR REPORT. THREE FIVE OBSERVATION. A LINE WITH EIGHT TENTH COVERAGE OF THUNDERSTORMS WITH HEAVY RAIN SHOWERS INCREASING IN INTENSITY EXTENDING FROM FIVE ZERO MILES NORTHWEST TO ONE ZERO MILES SOUTH OF WICHITA. TWO ZERO MILES WIDE. LINE MOVING NORTHEAST AT TWO FIVE KNOTS. CELLS MOVING NORTH AT TWO EIGHT KNOTS. MAX TOP THREE FIVE THOUSAND TWO ZERO MILES WEST OF WICHITA."

**Note. —** The groups of figures at the end of radar reports are the digital radar codes which may be plotted using an overlay. These letters and numbers are not broadcast.

**h.** Military Training Activity— Broadcast at H + 15 hourly and include on the PATWAS and TWEB (VOR and L/MF) a statement for MTR and MOA activity within 100NM of your facility, at least 30 minutes prior to the start of and until the activity is concluded.

*Phraseology:*

AVIATION BROADCAST, MILITARY TRAINING ACTIVITY ADVISORY—HIGH-SPEED MILITARY OPERATION(S) BEING CONDUCTED BELOW 10,000 FEET WITHIN 100NM OF FSS. CONTACT (name) FSS FOR DETAILS ON THIS ACTIVITY.

## 2-13. OUTLETS

Make the unscheduled broadcast on all en route NAVAIDS controlled by your facility, except VOR or TVOR used for ATIS or TWEB.

## 2-14. thru 2-19. RESERVED

## Section 3. TRANSCRIBED WEATHER BROADCASTS (TWEB)

### 2-20. GENERAL

The transcribed broadcast service provides continuous aeronautical and meteorological information on L/MF facilities.

### 2-21. CONTENT

The sequence, source, and content of transcribed broadcast material shall be:

**a.** Introduction.

*Phraseology:*

"TRANSCRIBED AVIATION WEATHER BROADCAST."

**b.** Synopsis—Prepared by selected WSFO's and stored in WMSC.

**c.** Adverse conditions. Extracted from FA, WST, WS, WA, CWA, AWW, etc.

*Phraseology:*

"FLIGHT PRECAUTIONS (text)."

**d.** TWEB Route Forecasts. Include valid time of forecasts prepared by WSFO's and stored in WMSC.

**e.** e. Winds aloft forecast. Broadcast the Service A winds aloft forecast for the location nearest to the TWEB. The broadcast should include the levels from 3,000 to 12,000 feet, but shall always include at least two forecast levels above the surface.

**f.** RADAR reports—furnished by the WSFO or in accordance with the procedures specified in Para. 302.

**g.** Surface weather reports. Record items of the weather reports as outlined in **para.** 244c(2) from not more than 20 reports. Up to 25 reports are authorized for HH TWEB outlets serving overseas routes.

(1) Broadcast local reports first, then the remainder of the reports, beginning with the first station east of true north and continuing clockwise around the TWEB location.

(2) Announce the location name of a surface report once.

*Phraseology:*

Surface weather broadcast introduction. "AVIATION WEATHER, (time) UTC OBSERVATION, UNLESS OTHERWISE STATED." Special weather reports. "(location name) SPECIAL REPORT (time of observation), (weather report)."

**h.** Pilot reports. Summarize PIREPs. If the weather conditions meet PIREP soliciting requirements within the area covered by the broadcast, append a request for PIREP's.

*Phraseology:*

"PILOT WEATHER REPORTS REQUESTED(location,area)FOR(cloud tops, icing, turbulence etc.), CONTACT FLIGHT WATCH OR THE NEAREST FLIGHT SERVICE STATION,"

**i.** Notices to Airmen. Make the following statement "FOR INFORMATION ON CURRENT NOTAMS, CONTACT THE NEAREST FLIGHT SERVICES STATION."

**j.** Military training activity. Broadcast a statement for MTR and MOA activity wiithin 100 NM of your facility at least 30 minutes prior to the start of, and until the activity is concluded.

*Phraseology:*

"MILITARY TRAINING ACTIVITY ADVISORY. HIGH-SPEED MILITARY OPERATIONS(S) BEING CONDUCTED BELOW 10,000 FEET WITHIN 100 NM OF —FSS. CONTACT (name)FSS FOR DETAILS ON THIS ACTIVITY."

**k.** Density altitude. Include the statement "Check Density Altitude" as part of the surface weather broadcast for any station with a field elevation of 2000 feet MSL or above that meets the following criteria:

| Field Elevation | Temperature(F) |
|---|---|
| 2000-2999 | 85 degrees or higher |
| 3000-3999 | 80 degrees or higher |
| 4000-4999 | 75 degrees or higher |
| 5000-5999 | 70 degrees or higher |
| 6000-6999 | 65 degrees or higher |
| 7000-higher | 60 degrees or higher |

### 2-22. TESTING TWEB EQUIPMENT

When TWEB equipment will be tested broadcast an advisory to this effect. Care shall be exercised to ensure no obsolete information is broadcast during a testing period.

### 2-23. REDUCED BROADCAST

TWEB service may be reduced during the hours of 2200-0500 local time. The hours may be less; e.g., 0000-0500 or 2200-0400, but not greater. Resumption of full broadcast service should be adjusted seasonally to coincide with daylight hours. During the period of reduced broadcast, record a brief statement of the general outlook (from available forecast material) for the next 12 hours.

## 2-24. SERVICE MAY BE SUSPENDED

TWEB service may be suspended:

**a.** For routine maintenance only during periods when weather conditions within 100 miles of the broadcast outlet are equal to or better than a ceiling of 3,000 feet and visibility of 5 miles.

**b.** When the equipment fails. If a malfunction occurs in the recording or control unit but the tape transport unit remains operative, continue broadcasting current data. Remove data as it becomes obsolete.

**c.** *Alaska*—during periods when the TWEB equipment is inoperative, the SWB shall be made on outlets used for TWEB where the capability exist.

## 2-25. MONITORING

**a.** At TWEB equipment locations, listen to at least one complete TWEB cycle each hour and correct any noted irregularities.

**b.** The control facility shall monitor the transmissions through the local outlet. If practicable, the FSS associated with a remoted outlet shall monitor the transmissions through the L/MF monitor receiver for a sufficient period each hour to observe voice quality and clarity.

**c.** Promptly correct, or inform the TWEB facility of any irregularities observed.

## 2-26. thru 2-29. RESERVED

# Section 4. VOR TWEB

## 2-30. GENERAL

This transcribed broadcast service provides continuous aeronautical and meteorological information on VOR facilities as follows:

**a.** At TWEB equipment (FAA 5210) locations controlling two or more VORs, the one used least for ground-to-air communications, preferably the nearest VOR, may be used as a TWEB outlet simultaneously with the H-SAB or SABH facility. Where this is accomplished, capability to manually override the broadcast shall be provided for emergency communications.

## 2-31. CONTENT

The sequence, source, and content of transcribed broadcast material shall be:

**a.** Introduction.

*Phraseology:*

"TRANSCRIBED AVIATION WEATHER BROADCAST."

**b.** Synopsis—Prepared by selected WSFO's and stored in WMSC.

**c.** Adverse conditions. Extracted from FA, WST, WS, WA, CWA, AWW, etc.

*Phraseology:*

"FLIGHT PRECAUTIONS (text)."

**d.** TWEB Route Forecasts. Include valid time of forecasts prepared by WSFO's and stored in WMSC.

**e.** e. Winds aloft forecast. Broadcast the Service A winds aloft forecast for the location nearest to the TWEB. The broadcast should include the levels from 3,000 to 12,000 feet, but shall always include at least two forecast levels above the surface.

**f.** RADAR reports—furnished by the WSFO or in accordance with the procedures specified in Para. 302.

**g.** Surface weather reports. Record items of the weather reports as outlined in **para. 244c(2)** from not more than 20 reports. Up to 25 reports are authorized for HH TWEB outlets serving overseas routes.

(1) Broadcast local reports first, then the remainder of the reports, beginning with the first station east of true north and continuing clockwise around the TWEB location.

(2) Announce the location name of a surface report once.

*Phraseology:*

Surface weather broadcast introduction."AVIATION WEATHER, (time) UTC OBSERVATION, UNLESS OTHERWISE STATED." Special weather reports. "(location name) SPECIAL REPORT (time of observation), (weather report)."

**h.** Pilot reports. Summarize PIREPs. If the weather conditions meet PIREP soliciting requirements within the area covered by the broadcast, append a request for PIREP's.

*Phraseology:*

"PILOT WEATHER REPORTS REQUESTED(location,area)FOR(cloud tops, icing, turbulence etc.), CONTACT FLIGHT WATCH OR THE NEAREST FLIGHT SERVICE STATION,"

**i.** Notices to Airmen. Make the following statement "FOR INFORMATION ON CURRENT NOTAMS, CONTACT THE NEAREST FLIGHT SERVICES STATION."

**j.** Military training activity. Broadcast a statement for MTR and MOA activity wiithin 100 NM of your facility at least 30 minutes prior to the start of, and until the activity is concluded.

*Phraseology:*

"MILITARY TRAINING ACTIVITY ADVISORY. HIGH-SPEED MILITARY OPERATIONS(S) BEING CONDUCTED BELOW 10,000 FEET WITHIN 100 NM OF —FSS. CONTACT (name)FSS FOR DETAILS ON THIS ACTIVITY."

**k.** Density altitude. Include the statement "Check Density Altitude" as part of the surface weather broadcast for any station with a field elevation of 2000 feet MSL or above that meets the following criteria:

| Field Elevation | Temperature(F) |
|---|---|
| 2000-2999 | 85 degrees or higher |
| 3000-3999 | 80 degrees or higher |
| 4000-4999 | 75 degrees or higher |
| 5000-5999 | 70 degrees or higher |
| 6000-6999 | 65 degrees or higher |
| 7000-higher | 60 degrees or higher |

## 2-32. REDUCED BROADCAST (VOR)

The hours of broadcast may be reduced in accordance with paragraph 2-24.

## 2-33. MONITORING (VOR)

At VOR TWEB equipment locations, listen to at least one complete TWEB cycle each hour and correct any noted irregularities.

## 2-34. thru 2-39. RESERVED

# Section 5. PILOTS AUTOMATIC TELEPHONE WEATHER ANSWERING SERVICE (PATWAS)

## 2-40. GENERAL

**a.** PATWAS provides a continuous telephone recording of meteorological information. At PATWAS facilities where the telephone is connected to the TWEB the information contained in the broadcast shall be in accordance with the TWEB format.

## 2-41. CONTENT

Prepare and disseminate data according to the following script.

**a.** *Introduction. "THIS BROADCAST PREPARED AT (time) LOCAL, (time) UTC. AVIATION WEATHER SUMMARY FOR A 50 NAUTICAL MILE RADIUS OF (location), VALID UNTIL (time) UTC.*

**b.** *Adverse Conditions.*

*Phraseology:*

"FLIGHT PRECAUTION (text)."

Reference Paragraph 167.b (2).

**c.** *VNR statement.*

*Phraseology:*

V-F-R FLIGHT NOT RECOMMENDED (location, if applicable) DUE TO (conditions)." Reference paragraph 167.b(2).

**d.** *Synopsis.*

**e.** *Current Conditions.*

(1) Ceilings and visibility conditions.

(2) Clouds: Bases, tops and layers.

(3) Icing, affected levels, intensity and type.

(4) Turbulence: affected levels, intensity and type.

(5) Weather radar report or analysis.

(6) PIREP's.

**f.** *Surface Winds.*

**g.** *Forecast.* Brief summary.

**h.** *Winds Aloft.*

**i.** *NOTAMS.* Make the following statement: "FOR INFORMATION ON CURRENT NOTAMS, CONTACT THE NEAREST FLIGHT SERVICE STATION."

**j.** *Military Training Activity.*

*Phraseology:* 0 "MILITARY TRAINING ACTIVITY ADVISORY, HIGH SPEED MILITARY OPERATION(S) BEING CONDUCTED BELOW 10,000 FEET WITHIN 100 NAUTICAL MILES OF————FSS. CONTACT(name)FSS FOR DETAILS ON THIS ACTIVITY."

**k.** **Request for PIREPs.**

*Phraseology:*

"PILOT WEATHER REPORTS ARE REQUESTED (location/area) FOR (icing, turbulence, cloud tops, etc.). CONTACT FLIGHT WATCH OR THE NEAREST FLIGHT SEVICE STATION TO REPORT THESE CONDITIONS OR OTHER PERTINENT IN-FLIGHT WEATHER THAT YOU ENCOUNTER EN ROUTE."

**l.** *Closing Announcement.*

(1) When all available information is recorded.

*Phraseology:*

"FOR ADDIIONAL INFORMATION OR SERVICES PLEASE DIAL (telephone number)."

(2) When information is incomplete due to recording limitation.

*Phraseology*

FOR INFORMATION ON CURRENT (e.g., FDC NOTAMs or MTR ACTIVITY) PLEASE DIAL (telephone number)."

*Suspension Announcement*

*Phraseology:*

"REGULAR RECORDED WEATHER SUMMARY WILL BE RESUMED AT (time) LOCAL(time) UTC. FOR BRIEFING OR FLIGHT PLAN SERVICE DIAL (telephone number)".

## 2-42. PATWAS BROADCAST PROCEDURES

Prepare PATWAS broadcasts at 0500, 0900, 1300, 1700, and 2200 Local time using the following procedures.

Note.— Recording times may be adjusted with regional approval.

**a.** The introduction should contain a general description of the weather products available as part of the PATWAS broadcast. It should state the area of coverage of the broadcast.

(1) The service area may be configured to meet individual facility needs; i.e., 100 NMR, route oriented, TWEB route data, etc.

(2) Valid time shall not exceed 5 hours.

**b.** *Summarize adverse conditions.* Include Convective Significant Meteorological Information (WST), Significant Meteorological Information (SIGMET), Airmens Meteorological Information (AIRMET), Center Weather Advisory (CWA), Flight precautions in Area Forecast (FA), severe weather watch (WW) and any other available information that may adversely affect flight in the PATWAS area.

**c.** *VFR not recommended statement.* When actual or forecast conditions, surface based or aloft, are such as to make visual flight (VFR) doubtful,include this statement in the broadcast.

**d.** *Synopsis.* The information included in the synopsis should be a reflection of current and forecast conditions included in the broadcast. Use synopsis products prepared by selected WSFOs or extracted from the synopsis section of the area forecast. The synopsis may be updated using valid current information from other weather products or by consultation with an associated WSFO.

**e.** *Current conditions.* Summarize current weather conditions over the broadcast area. Include PIREPs on conditions reported aloft and radar reports or a summary of observed radar echos from local equipment.

**f.** *Surface winds.* Provide surface wind summarized from local reports.

**g.** *Forecast. Summarize forecast conditions over the broadcast area.*

**h.** *Winds aloft.* Summarize winds aloft as forecast for the local station or as interpolated from forecasts of adjacent stations for levels 3000 through 9000 feet or a minimum of at least two forecast levels above the highest terrain.

**i.** *NOTAMs.* The NOTAM statement must be included to alert pilots that aeronautical information that may affect their flight is not included as part of the broadcast and must be requested by direct contact with a FSS.

**j.** *Military training activities.* Include the MOA/MTR broadcast when training activity will be conducted within 100NM of the FSS, at least 30 minutes prior to start of, and until the activity is concluded.

**k.** *Request for PIREPs.* When weather conditions within the broadcast area meet the requirements for soliciting PIREPs, include a request in the broadcast.

**l.** *Closing announcement.* The appropriate closing announcement phraseology shall be in accordance with the script and included at the end of all recordings.

## 2-43. PATWAS ANNOUNCEMENTS

If service is reduced during the period 2200-0500 local time, record a general outlook for the area and the suspension announcement on the script. Instructions contained within this handbook, paragraph 2-24, shall apply.

## 2-44. MONITORING

Recordings shall be monitored and checked for accuracy immediately after recording and hourly. After each recording, the PATWAS shall be checked for accuracy by calling the PATWAS telephone number. Hourly checks may be accomplished using local monitoring.

## 2-45. thru 2-49. RESERVED

## Section 6. SCHEDULED WEATHER BROADCASTS (ALASKA ONLY)

### 2-50. GENERAL

The SWB shall be made at H + 15 each hour. Consistent with priority of duties, begin all broadcasts promptly on schedule.

### 2-51. SURFACE REPORTS

The SWB shall include not more than 12 hourly surface reports (except as outlined in a. below) selected from:

**a.** Local report of the broadcast location and outlets. Broadcast additional reports from one or more airports in the immediate vicinity, including LAWRS, when conditions vary sufficiently to affect aircraft operations; e.g., ANC, MRI, and EDF are "locals."

**b.** Reports from locations outward within 150 NM from the broadcast location, beginning with the first station east of true north and continuing clockwise.

**Note. —** At locations where 150 NM is not adequate, broadcast reports from locations outward within a pertinent distance from the broadcast location.

### 2-52. OUTLETS

Make the SWB on all en route NAVAIDs controlled by your facility, except VOR or TVOR used for ATIS service or TWEB service.

### 2-53. CONTENT

Include, as available, items in a SWB in the following order:

**a.** ALNOT alert announcement.

**b.** Hourly sequence weather reports, including remarks and appended NOTAMs.

**c.** Weather Advisories (WST, WS, WA, CWA, WW).

**d.** Pilot Weather Reports (PIREPs).

**e.** Radar Weather Reports (RAREPs).

**f.** NOTAMs not published in the Notices to Airmen (Class II) Publication.

**g.** Lost or overdue aircraft notice (ALNOT).

**h.** Include a statement for MTR/MOA activity within 100 NM of your facility at least 30 minutes prior to the start of and until the activity is concluded.

**Reference—** paragraph 2-12g.

### 2-54. PROCEDURES

**a.** Broadcast the local report as the first and last sequence weather report of the broadcast. Broadcast the other reports in the clockwise order of their selection.

**b.** Announce the time (last two digits of the observation time) of special (SPL) weather reports when a SPL supersedes an hourly sequence report. Abstract from the regular reports those items which are pertinent and are not included in the SPL; e.g., AIRVILLE, AIRVILLE, SPECIAL REPORT, ONE ZERO OBSERVATION, etc.

**c.** Speak the items in a SWB as follows:

1. Introduction—Say: "Aviation broadcast, weather...."

2. Broadcast the surface report as follows:

| Element | Announce |
|---|---|
| 1. Location Name | Twice. |
| 2. Sky condition | As reported. |
| 3. Visibility | As reported. |
| 4. Weather Phenomena | As reported |
| 5. Temperature[1] | When 40 degrees or less or 85 degrees or higher |
| 6. Dewpoint | When temperature/dewpoint spread is 5 degrees or less, give both. |
| 7. Surface wind[1, 2] | Direction and speed when 10 knots or more. |
| 8. Altimeter[1, 2] | Local report only. |
| 9. Remarks | In accordance with paragraph 2-6h |

[1] Always give these elements in the local report of the broadcasting station.

[2] Read from instruments in the A/G console, when available.

**d.** Close the SWB by saying: "THE TIME IS (To the nearest ¼ minute in two digits and a fraction)."

### 2-55. SUSPENSION OF SWB

*Alaska*—SWB service may be suspended:

**a.** Between 2200 and 0500 LST where in so doing personnel and/or equipment savings will accrue. The hours of suspension may be less; e.g., 0000-0500 or 2200-0400, but not greater. The service resumption time should be adjusted seasonally so that service availability coincides with daylight hours.

**b.** Indefinitely at TWEB equipment (FAA 5210) locations where a VOR (paragraph 2-30a) is used as a TWEB outlet. Continue the SWB for 30 days after implementing TWEB service on a VOR and include the announcement:

"ADDITIONAL WEATHER DATA ARE BROADCAST CONTINUALLY ON (NAME) VOR, FREQUENCY (STATE FREQUENCY)."

### 2-56. thru 2-59. RESERVED

# Chapter 3. PILOT BRIEFING

## Section 1. GENERAL

### 3-1. PRE-DUTY REQUIREMENTS

**a.** Before assuming pilot briefing duties, familiarize yourself sufficiently with aeronautical and weather conditions to effectively provide briefing service. This includes:

1. General location of weather causing systems and general weather conditions for the entire contiguous United States and/or other briefing areas as appropriate; e.g., Alaska, Hawaii, Mexico, Canada, Puerto Rico, etc.

2. Detailed information of current and forecast weather conditions within your flight service area.

3. Other pertinent items such as NOTAMs, MTR/MOA activity, etc.

**b.** Accomplish this in accordance with **paragraph 1-33** and pertinent facility directives.

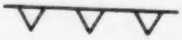
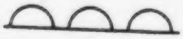
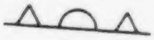
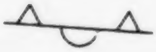
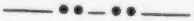
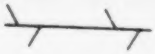
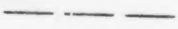
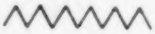
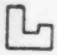
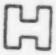
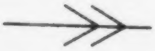
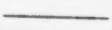
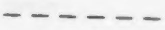
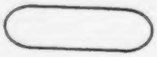
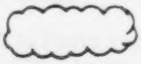
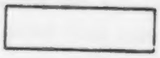
### 3-2. PREFLIGHT BRIEFING DISPLAY

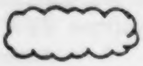
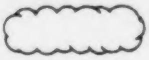
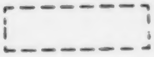
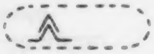
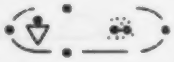
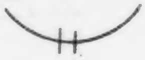
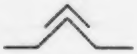
Provide a preflight briefing display for specialist/pilot use. The contents and method of display shall be based on individual facility requirements; e.g., available equipment, space, etc. Additional displays, as required, shall be provided to ensure availability of information at all inflight and preflight positions. At the discretion of facility management, provide a separate display for pilot use. All material in such displays shall be kept updated. Facsimile charts shall have a valid time, and should be enhanced in accordance with **paragraph 3-3.**

### 3-3. WEATHER DISPLAY SYMBOLS

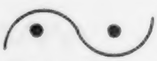
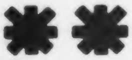
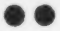
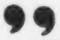
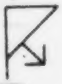
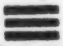
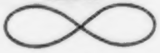
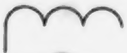
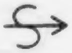
The utility of facsimile charts is greatly enhanced by coloring and shading. Use the following symbols and coloring on all weather chart displays. Different colors may be used to enhance black and white CCTV displays.

**a.** Map Features:

| Type | Symbol | Color |
|---|---|---|
| Cold front |  | blue |
| Warm front |  | red |
| Occluded front |  | purple |
| Stationary front |  | red and blue |
| Instability line |  | purple |
| Convergence line |  | green |
| Trough |  | brown |
| Ridge |  | yellow |
| Low pressure center |  | red |
| High pressure center |  | blue |
| Jet streams |  | black |
| Isotherms |  | red |
| Isotachs |  | yellow |
| Freezing level aloft | 80 - - - - - 80 | red |
| IFR conditions |  | red |
| MVFR conditions |  | blue |
| Line of echoes |  | red |

| Type | Symbol | Color |
|---|---|---|
| Overcast Clouds (36-48 Hour Prog Only) |  | Orange |
| Area of echoes |  | green |
| Severe Weather area |  | red |
| Turbulence areas |  | red |
| Precipitation areas |  | green |
| Icing Symbols |  | red |
| Turbulence symbols |  | red |

**b.** Precipitation and obstruction to vision:

| Type | Symbol | Color |
|---|---|---|
| Freezing precipitation |  | red |
| Snow |  | green |
| Rain |  | green |
| Drizzle |  | green |
| Thunderstorm |  | red |
| Fog |  | yellow |
| Haze |  | yellow |
| Smoke |  | black |
| Dust |  | brown |

Illustration

**c.** The weather graphic display should include, but not necessarily be limited to, the following analysis, prognosis, and data charts:

1. Weather Depiction
2. Surface Analysis
3. Forecast Winds Aloft
4. Current Winds Aloft
5. National Radar Summmary
6. 850 MB
7. 700 MB
8. 500 MB
9. 300 MB
10. 200 MB
11. Lifted Index—Precipitable water freezing level—mean relative humidity.
12. 12-hour and 24-hour low level significant weather prognosis.
13. Tropopause maximum wind/shear; high level significant weather prognosis.
14. 36 and 48 hour surface prognosis.

**d.** The listed charts which cannot be displayed, shall nevertheless be retained for specialist/pilot use.

## 3-4. FORECASTS, WARNINGS, AND ADVISORIES

Use only weather forecasts, warnings, and advisories issued by an NWS office (including CWSU's); the U.S. military or foreign governments. When an NWS forecast meets amendment criteria, request assistance from the appropriate NWS office.

## 3-5. UNAVAILABILITY OF DATA

Use all available means to obtain the data required to brief pilots to their destination. If a complete briefing cannot be provided due to circuit problems or missing data, inform the pilot of this fact; brief to the extent possible; and as appropriate, furnish the pilot with the telephone number of another FSS, a NWS office, or advise the pilot of the time you expect the data to be available.

## 3-6. TYPE OF BRIEFING TO BE CONDUCTED

Provide the pilot with the type briefing requested, i.e., standard, abbreviated or outlook. When it is not clear initially which type briefing is desired, provide the first one or two items requested, and then ask the pilot "Would you like a standard briefing?" If a standard briefing is requested, conduct the briefing in accordance with paragraph 3-10. If the pilot does not desire a standard briefing, conduct the briefing in accordance with paragraph 3-11 or 3-12.

## 3-7. USE OF FORMS

Use FAA Forms 7233-1, 7233-2, 7233-5 and 7230-21 for recording pilot briefings. Document briefing by one of the following methods:

**a.** FAA Form 7233-2—Use a separate form each day. Two or more forms may be used simultaneously at different operating positions. Complete boxes 1 through 3 on each form. Enter appropriate data in columns 4, 5, 6, 7 (if pertinent), and 8. Pilot's name may be substituted for aircraft identification, if unknown. As applicable, enter "OTLK" (Outlook briefing), "AB" (Abbreviated briefing), and/or "VNR" in column 7.

**b.** FAA Form 7233-1—Check the "pilot briefing" block, fill in "specialist initials" and "time started." As applicable enter "AB," "OTLK" and/or check the "VNR" block.

**c.** FAA Forms 7233-5/7230-21—Enter "PB" in block 14 if a briefing is provided. As applicable, also enter "AB," "OTLK," and/or "VNR" in the same block.

**d.** Where recorders are used, facility management may limit entries on pilot briefing records to those required for facility use.

### 3-8. thru 3-9. RESERVED

## Section 2. PREFLIGHT PILOT BRIEFING

### 3-10. CONDUCT OF STANDARD BRIEFING

**a.** Brief by translating, interpreting and summarizing available data for the intended flight. Do not read individual weather reports or forecasts unless, in your judgment, it is necessary to emphasize an important point or unless specifically requested to do so by the pilot. Obtain the following information if it is pertinent and not evident or already known:

1. Type of flight planned
2. Aircraft number or pilot's name
3. Aircraft type
4. Departure airport
5. Route-of-flight
6. Destination
7. Flight altitude(s)
8. ETD and ETE

**b.** Using all sources of weather and aeronautical information, provide the following data when it is applicable to the proposed flight. Provide items 1 through 8 in the sequence listed, except as noted.

1. *Adverse Conditions*—Include this element when meteorological or aeronautical conditions are reported or forecast that might influence the pilot to alter the proposed flight. Emphasize conditions that are particularly significant such as low level wind shear; embedded thunderstorms; reported icing; frontal zones along the route of flight; airport closures; air traffic delays, etc. Weather advisories (FA Flight Precautions, WS, WA WST, CWA, AWW) shall be given by stating the type of advisory followed by the pertinent information.

2. *VFR Flight Not Recommended (VNR)*—Include this recommendation when VFR flight is proposed, and sky conditions or visibilities are present or forecast, surface or aloft that, in your judgment, would make flight under visual flight rules doubtful. Describe the conditions, affected locations and times, and use the phrase "V-F-R flight is not recommended."

**Examples. —**

"THERE ARE BROKEN CLOUDS ALONG THE ENTIRE ROUTE BETWEEN 9 and 11 THOUSAND FEET MSL AT THE PRESENT TIME. WITH THE APPROACH OF A COLD FRONT THESE CLOUDS ARE FORECAST TO BECOME OVERCAST AND TO LOWER TO BELOW 7 THOUSAND MSL WITH MOUNTAINS AND PASSES BECOMING OBSCURED. VFR FLIGHT IS NOT RECOMMENDED BETWEEN SALT LAKE CITY AND GRAND JUNCTION AFTER 22Z."

"VFR FLIGHT IS NOT RECOMMENDED IN THE SEATTLE AREA UNTIL EARLY AFTERNOON. THE CURRENT WEATHER AT SEATTLE IS W3X1F, AND LITTLE IMPROVEMENT IS EXPECTED BEFORE 18Z."

**Note. —** This recommendation is advisory in nature. The decision as to whether the flight can be conducted safely rests solely with the pilot.

3. *Synopsis*—Provide a brief statement describing the type, location and movement of weather systems and/or masses which might affect the proposed flight. This element may be combined with adverse conditions and/or the VNR element, in any order, when it will help to more clearly describe conditions.

4. *Current Conditions*—Summarize from all available sources, e.g., SA's, PIREP's, RAREP's, reported weather conditions applicable to the flight. This element may be omitted if the proposed time of departure is beyond two hours, unless the information is requested by the pilot.

5. *En Route Forecast*—Summarize from appropriate data, e.g., FA's, prognosis charts, weather advisories, etc., forecast conditions applicable to the proposed flight. Provide the information in a logical order, i.e., climb out, en route, and descent.

6. *Destination Forecast*—Provide the destination forecast, including significant changes expected within 1 hour before and after the ETA

7. *Winds Aloft*—Summarize forecast winds aloft for the proposed route. Interpolate wind directions and speeds between levels and stations as necessary. Provide temperature information on request.

8. *Notices to Airmen (NOTAM)*

    (a) Provide available NOTAM (D) and NOTAM (L) information pertinent to the flight.

    (b) Provide FDC NOTAMS within your flight service area which are pertinent to the proposed flight and are not already carried in the Notices to Airmen (Class II) publication.

    (c) Combine this element with current conditions when it would be logical and advantageous to do so.

9. *ATC Delays*—Inform the pilot of any known ATC delays and/or any flow control advisories on hand that might affect the proposed flight.

10. *Request for Pilot Weather Reports (PIREP's)*—Include this element when conditions meet the criteria for solicitation of PIREP's in paragraph 9-13 and any other time that in your judgment, a report of actual inflight conditions would be beneficial.

11. *Other Services*— Inform pilots of the availability of En Route Flight Advisory Service, the advantages to be gained by use of the service, and request they participate by providing pilot weather reports to the FW position.

12. *Upon request:*

(a) Provide information on military training routes and MOA activity within 100 miles of your facility.

**Note.** — The above procedure does not preclude you from exercising your own best judgment in providing further assistance when you have doubt concerning the adequacy of data being furnished to alert a pilot to the existence of an active MTR or MOA.

(b) Review the Notices to Airmen (Class II) publication and inform the pilot of pertinent notices to airmen and special notices.

(c) Provide approximate density altitude data.

(d) Provide information regarding such items as air traffic service and rules, customs/immigration procedures, ADIZ rules, SAR, etc.

## 3-11. CONDUCT OF ABBREVIATED BRIEFING

Provide an abbreviated briefing when a pilot requests information to supplement mass disseminated data; update a previous briefing; or when the pilot requests that the briefing be limited to specific information. Conduct abbreviated briefings as follows:

**a.** When a pilot desires specific information only, provide the requested information. If adverse conditions are present or forecast, advise the pilot of this fact. Provide details on these conditions in accordance with paragraph 3-10b (1) if the pilot requests that you do so.

**b.** When a pilot requests an update to a previous briefing, obtain from the pilot the time the briefing was received and necessary background information. To the extent possible, limit the briefing to appreciable changes in meteorological and aeronautical conditions since the previous briefing.

**c.** When a pilot requests information to supplement data obtained through FSS mass dissemination media, obtain pertinent background information, the specific items required by the pilot, and provide the information in the sequence shown in paragraph 3-10b.

**d.** Solicit PIREP's in accordance with paragraph 3-10b(10).

## 3-12. CONDUCT OF OUTLOOK BRIEFING

**a.** Provide an outlook briefing when the proposed departure is six or more hours from the time of the briefing. Conduct the briefing in the sequence shown in paragraph 3-10b. Limit the briefing to forecast data applicable to the proposed flight. Omit items 4 and 7 through 11 unless specifically requested by the pilot.

**b.** When the proposed flight is scheduled to be conducted beyond the valid time of the available forecast material, provide a general outlook and then advise the pilot when complete forecast data will be available for the proposed flight. Upon request, transfer the call to, or furnish the telephone number of the appropriate NWS office.

## 3-13. thru 3-19. RESERVED

# Section 3. INFLIGHT BRIEFING

## 3-20. CONDUCT OF INFLIGHT BRIEFING

Provide the pilot with available meteorological and aeronautical information in accordance with paragraph 3-10, 3-11, or 3-12 as appropriate. Recommend shifting to the flight watch frequency when in your judgment, weather conditions along the route indicate that it would be advantageous for the pilot to do so. Provide information during routine radio contacts as follows:

**a.** When a weather advisory is in effect, i.e., FA flight precautions WA, WS, WST, CWA orAWW, which pertains to an area within 150 NM miles of the aircraft's position, obtain the route and destination if not already known. Deliver the advisory if it is pertinent and the pilot indicates that it has not been received previously.

**b.** When the destination is in your station's flight plan area, inform the pilot of any pertinent NOTAM's on hand.

## 3-21. INFLIGHT RADAR WEATHER ADVISORY SERVICE

**a.** Interpret and summarize weather radar video displays and issue pertinent information on observed/reported weather areas.

**b.** Use all available radar data and PIREP's to determine intensity, tops, area of coverage, movement, etc. See Glossary, Appendix A (Radar Weather Echo Intensity Levels).

**c.** Identify data obtained from sources other than radar video display by source and time of observation.

**d.** To the extent possible, define area of coverage in relation to VOR's or airways for the route structure being flown. Airports or geographic points may be used to assist the pilot in relating coverage to route of flight or destination.

**Example. —**

A BROKEN LINE OF WEAK TO INTENSE ECHOES COVERS AN AREA ALONG AND 30 MILES EAST OF A LINE FROM THE CRAZY WOMAN VOR TO THE RIVERTON VOR. AVERAGE TOPS BETWEEN TWO-SIX THOUSAND AND THREE-FOUR THOUSAND. THIS LINE IS INCREASING IN INTENSITY. MOVEMENT HAS BEEN FROM THE NW TO SE AT 30 KNOTS. THE LINE INCLUDES AN INTENSE ECHO 15 MILES IN DIAMETER ON VICTOR 298 FORTY-EIGHT MILES SE OF THE WORLAND VOR, TOPS FOUR-THREE THOUSAND. THERE ARE NO KNOWN ECHOES WITHIN 30 NM OF V85-298S AT THIS TIME.

## 3-22. thru 3-29. RESERVED

# Chapter 4. INFLIGHT SERVICES

## Section 1. GENERAL

### 4-1. OPERATIONAL PRIORITY

Provide flight services to aircraft on a "first come, first served" basis as circumstances permit, except the following:

**a.** Provide priority service to aircraft in distress.

**b.** Provide priority service to civilian air ambulance flights (lifeguard). When requested, provide priority to military air evacuation flights (AIR EVAC, MED EVAC). Assist the pilots of air ambulance/evacuation aircraft to avoid areas of significant weather and turbulent conditions. When requested by a pilot, provide notification to expedite ground handling of patients, vital organs, or urgently needed medical materials.

**c.** Provide maximum assistance to SAR aircraft performing a SAR mission.

**d.** Provide special handling as required to expedite flight check and a SAFI aircraft.

**Note.—** It is recognized that unexpected wind conditions, weather, or heavy traffic flows may affect ability to provide priority or special handling at the time requested.

### 4-2. TYPES OF SERVICES

**a.** Radio and Interphone Communications

**b.** Recording Aircraft Contacts

**c.** Briefings

**d.** Monitoring

**e.** Strip Marking

**f.** Broadcast Duty

**g.** Airport Advisory Services (AAS)

**h.** Enroute Flight Advisory Services (EFAS)

**i.** Emergency

### 4-3. BRIEFING

**a.** Provide the pilot with available meteorological and aeronautical information in accordance with paragraph 3-10, 3-11, or 3-12 as appropriate.

**b.** Provide information during routine radio contacts as follows:

**1.** When a weather advisory is in effect, i.e., WA, WS, WST, CWA or AWW, which pertains to an area within 150 NM miles of the aircraft's position, obtain the route and destination if not already known. Deliver the advisory if it is pertinent and the pilot indicates that it has not been received previously.

**2.** When the destination is in your station's flight plan area, inform the pilot of any pertinent NOTAM's on hand.

**c.** Interpret and summarize weather radar video displays and issue pertinent information on observed/reported weather areas.

**1.** Use all available radar data and PIREP's to determine intensity, tops, area of coverage, movement, etc. See Glossary, Appendix A (Radar Weather Echo Intensity Levels).

**2.** Identify data obtained from sources other than radar video display by source and time of observation.

**3.** To the extent possible, define area of coverage in relation to VOR's or airways for the route structure being flown. Airports or geographic points may be used to assist the pilot in relating coverage to route of flight or destination.

**Example. —**

A BROKEN LINE OF WEAK TO INTENSE ECHOES COVERS AN AREA ALONG AND 30 MILES EAST OF A LINE FROM THE CRAZY WOMAN VOR TO THE RIVERTON VOR. AVERAGE TOPS BETWEEN TWO-SIX THOUSAND AND THREE-FOUR THOUSAND. THIS LINE IS INCREASING IN INTENSITY. MOVEMENT HAS BEEN FROM THE NW TO SE AT 30 KNOTS. THE LINE INCLUDES AN INTENSE ECHO 15 MILES IN DIAMETER ON VICTOR 298 FORTY-EIGHT MILES SE OF THE WORLAND VOR, TOPS FOUR-THREE THOUSAND. THERE ARE NO KNOWN ECHOES WITHIN 30 NM OF V85-298S AT THIS TIME.

**d.** Inflight specialists shall recommend shifting to the flight watch frequency for en route advisories when weather conditions in an area along the pilot's route of flight so dictate. An example would be a pilot flying into an area of marginal weather farther along his route. It would be advantageous for the pilot to contact the flight watch specialist to pursue an alternate course of action should the need arise.

### 4-4. thru 4-9. RESERVED

## Section 2. RADIO COMMUNICATIONS

### 4-10. FREQUENCY USE

Use radio frequencies for the special purposes for which they are assigned. A frequency may be used for more than one function when required. Use the minimum number of frequencies to conduct all communications. Request pilots to file flight plans on simplex or station discrete frequencies when possible.

### 4-11. AUTHORIZED TRANSMISSIONS

Transmit only those messages necessary for air traffic control or air safety.

**a.** Relay operational information to a scheduled air carrier aircraft or its company as requested when abnormal conditions necessitate such requests. Do not agree to handle such messages on a regular basis.

**b.** Inform an aircraft of the source of any message you relay from the airport management, military commander, or other appropriate authority.

**c.** Relay official FAA messages, as required.

**Note. —** The FAA Administrator and Deputy Administrator will use code phrases to identify themselves in air to ground radio communications as follows:

Administrator—"Safe Air One."

Deputy Administrator—"Safe Air Two."

**Example. —**

"MIAMI RADIO, CONVAIR ONE ZERO FOUR, SAFE AIR ONE, (message)."

### 4-12. RADIO MESSAGE FORMAT

Initiate radio communications with an aircraft by using the following format:

**a.** Initial call-up:

1. Identification of aircraft being called.
2. Identification of the calling unit.
3. The type of message to follow, when this will assist the pilot.
4. The word "over," if required.

**Example. —**

"APACHE THREE FOUR SEVEN SEVEN PAPA ELMIRA RADIO, OVER."

"APACHE THREE FOUR SEVEN SEVEN PAPA ELMIRA RADIO, A-T-C CLEARANCE OVER."

**b.** Replying to call-up from aircraft:

1. Identification of the aircraft initiating the call up.
2. Identification of the replying unit.
3. The word "over", if required.

**Example. —**

"APACHE THREE FOUR SEVEN SEVEN PAPA, ELMIRA RADIO, OVER."

**c.** Use the same format as for initial call-up and reply after communication is established except, after stating the identification of the calling or replying unit, state the message to be sent or acknowledgment of the message received.

**d.** Preface a clearance or instruction intended for a specific aircraft with the identification of that aircraft.

### 4-13. ABBREVIATED TRANSMISSIONS

Transmissions may be abbreviated as follows:

**a.** Use identification prefix and the last three digits or letters of the aircraft identification after communications are established. Do not abbreviate similar sounding aircraft identifications, or the identification of an air carrier or other civil aircraft having an FAA authorized call sign.

**b.** Omit facility identification after communication has been established.

**c.** Transmit message immediately after call-up (without waiting for aircraft reply) when it is short and receipt is generally assured.

**Example. —**

"APACHE SEVEN SEVEN PAPA, ATC CLEARS, etc."

**d.** Omit the word "over" if the message obviously requires a reply.

### 4-14. ROUTINE RADIO CONTACTS

Record information received from or given to the pilot. Provide aeronautical and meteorological information in accordance with paragraph 4-3. Prior to terminating the contact, provide the following information:

**a.** If the aircraft is operating below 18,000 feet MSL, issue current altimeter setting obtained from direct reading instruments, or received from weather reporting stations. Use the setting for the location nearest the position of the aircraft. *Exception:* If the aircraft is arriving or departing a local airport served by an operating control tower, issue altimeter setting on request only.

**b.** If the aircraft is operating VFR and reports at an incorrect cruising altitude for the direction of flight, issue a VFR cruising altitude advisory.

*Phraseology:*

VFR CRUISING LEVELS FOR YOUR DIRECTION OF FLIGHT ARE:

*From more than 3000 above the surface to but not including 18,000 MSL:*

ODD/EVEN ALTITUDES PLUS FIVE HUNDRED FEET

**Note. —** Facilities located in those areas where VFR altitude separation is below 3,000 feet or above 18,000 MSL shall provide appropriate phraseology examples for local use.

**c.** If a request for the altimeter setting in MILLIBARS is received, use the setting for the location nearest the position of the aircraft and the conversion chart. If the MILLIBAR setting is not a whole number, always round down.

# MILLIBAR CONVERSION CHART

| in. | mb. | in. | mb. | in. | mb. | in. | mb. | in. | mb. | in. | m. | in. | mb. | in. | mb. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27.50 | 931.3 | 28.00 | 948.2 | 28.50 | 965.1 | 29.00 | 982.1 | 29.50 | 999.0 | 30.00 | 1015.9 | 30.50 | 1032.8 | 31.00 | 1049.8 |
| 27.51 | 931.6 | 28.01 | 948.5 | 28.51 | 965.5 | 29.01 | 982.4 | 29.51 | 999.3 | 30.01 | 1016.3 | 30.51 | 1033.2 | 31.01 | 1050.1 |
| 27.52 | 931.9 | 28.02 | 948.9 | 28.52 | 965.8 | 29.02 | 982.7 | 29.52 | 999.7 | 30.02 | 1016.6 | 30.52 | 1033.5 | 31.02 | 1050.5 |
| 27.53 | 932.3 | 28.03 | 949.2 | 28.53 | 966.1 | 29.03 | 983.1 | 29.53 | 1000.0 | 30.03 | 1016.9 | 30.53 | 1033.9 | 31.03 | 1050.8 |
| 27.54 | 932.6 | 28.04 | 949.5 | 28.54 | 966.5 | 29.04 | 983.4 | 29.54 | 1000.3 | 30.04 | 1017.3 | 30.54 | 1034.2 | 31.04 | 1051.1 |
| 27.55 | 933.0 | 28.05 | 949.9 | 28.55 | 966.8 | 29.05 | 983.7 | 29.55 | 1000.7 | 30.05 | 1017.6 | 30.55 | 1034.5 | 31.05 | 1051.5 |
| 27.56 | 933.3 | 28.06 | 950.2 | 28.56 | 967.2 | 29.06 | 984.1 | 29.56 | 1001.0 | 30.06 | 1017.9 | 30.56 | 1034.9 | 31.06 | 1051.8 |
| 27.57 | 933.6 | 28.07 | 950.6 | 28.57 | 967.5 | 29.07 | 984.4 | 29.57 | 1001.4 | 30.07 | 1018.3 | 30.57 | 1035.2 | 31.07 | 1052.2 |
| 27.58 | 934.0 | 28.08 | 950.9 | 28.58 | 967.8 | 29.08 | 984.8 | 29.58 | 1001.7 | 30.08 | 1018.6 | 30.58 | 1035.6 | 31.08 | 1052.5 |
| 27.59 | 934.3 | 28.09 | 951.2 | 28.59 | 968.2 | 29.09 | 985.1 | 29.59 | 1002.0 | 30.09 | 1019.0 | 30.59 | 1035.9 | 31.09 | 1052.8 |
| 27.60 | 934.6 | 28.10 | 951.6 | 28.60 | 968.5 | 29.10 | 985.4 | 29.60 | 1002.4 | 30.10 | 1019.3 | 30.60 | 1036.2 | 31.10 | 1053.2 |
| 27.61 | 935.0 | 28.11 | 951.9 | 28.61 | 968.8 | 29.11 | 985.8 | 29.61 | 1002.7 | 30.11 | 1019.6 | 30.61 | 1036.6 | 31.11 | 1053.5 |
| 27.62 | 935.3 | 28.12 | 952.3 | 28.62 | 969.2 | 29.12 | 986.1 | 29.62 | 1003.0 | 30.12 | 1020.0 | 30.62 | 1036.9 | 31.12 | 1053.8 |
| 27.63 | 935.7 | 28.13 | 952.6 | 28.63 | 969.5 | 29.13 | 986.5 | 29.63 | 1003.4 | 30.13 | 1020.3 | 30.63 | 1037.6 | 31.13 | 1054.2 |
| 27.64 | 936.0 | 28.14 | 952.9 | 28.64 | 969.9 | 29.14 | 986.8 | 29.64 | 1003.7 | 30.14 | 1020.7 | 30.64 | 1037.6 | 31.14 | 1054.5 |
| 27.65 | 936.3 | 28.15 | 953.3 | 28.65 | 970.2 | 29.15 | 987.1 | 29.65 | 1004.1 | 30.15 | 1021.0 | 30.65 | 1037.9 | 31.15 | 1054.9 |
| 27.66 | 936.7 | 28.16 | 953.6 | 28.66 | 970.5 | 29.16 | 987.5 | 29.66 | 1004.4 | 30.16 | 1021.3 | 30.66 | 1038.3 | 31.16 | 1055.2 |
| 27.67 | 937.0 | 28.17 | 953.9 | 28.67 | 970.9 | 29.17 | 987.8 | 29.67 | 1004.7 | 30.17 | 1021.7 | 30.67 | 1038.6 | 31.17 | 1055.5 |
| 27.68 | 937.4 | 28.18 | 954.3 | 28.68 | 971.2 | 29.18 | 988.1 | 29.68 | 1005.1 | 30.18 | 1022.0 | 30.68 | 1038.9 | 31.18 | 1055.9 |
| 27.69 | 937.7 | 28.19 | 954.6 | 28.69 | 971.6 | 29.19 | 988.5 | 29.69 | 1005.4 | 30.19 | 1022.4 | 30.69 | 1039.3 | 31.19 | 1056.2 |
| 27.70 | 938.0 | 28.20 | 955.0 | 28.70 | 971.9 | 29.20 | 988.8 | 29.70 | 1005.8 | 30.20 | 1022.7 | 30.70 | 1039.6 | 31.20 | 1056.6 |
| 27.71 | 938.4 | 28.21 | 955.3 | 28.71 | 972.2 | 29.21 | 989.2 | 29.71 | 1006.1 | 30.21 | 1023.0 | 30.71 | 1040.0 | 31.21 | 1056.9 |
| 27.72 | 938.7 | 28.22 | 955.6 | 28.72 | 972.6 | 29.22 | 989.5 | 29.72 | 1006.4 | 30.22 | 1023.4 | 30.72 | 1040.3 | 31.22 | 1057.2 |
| 27.73 | 939.0 | 28.23 | 956.0 | 28.73 | 972.9 | 29.23 | 989.8 | 29.73 | 1006.8 | 30.23 | 1023.7 | 30.73 | 1040.6 | 31.23 | 1057.6 |
| 27.74 | 939.4 | 28.24 | 956.3 | 28.74 | 973.2 | 29.24 | 990.2 | 29.74 | 1007.1 | 30.24 | 1024.0 | 30.74 | 1041.0 | 31.24 | 1057.9 |
| 27.75 | 939.7 | 28.25 | 956.7 | 28.75 | 973.6 | 29.25 | 990.5 | 29.75 | 1007.5 | 30.25 | 1024.4 | 30.75 | 1041.3 | 31.25 | 1058.2 |
| 27.76 | 940.1 | 28.26 | 957.0 | 28.76 | 973.9 | 29.26 | 990.9 | 29.76 | 1007.8 | 30.26 | 1024.7 | 30.76 | 1041.7 | 31.26 | 1058.6 |
| 27.77 | 940.4 | 28.27 | 957.3 | 28.77 | 974.3 | 29.27 | 991.2 | 29.77 | 1008.1 | 30.27 | 1025.1 | 30.77 | 1042.0 | 31.27 | 1058.9 |
| 27.78 | 940.7 | 28.28 | 957.7 | 28.78 | 974.6 | 29.28 | 991.5 | 29.78 | 1008.5 | 30.28 | 1025.4 | 30.78 | 1042.3 | 31.28 | 1059.3 |
| 27.79 | 941.1 | 28.29 | 958.0 | 28.79 | 974.9 | 29.29 | 991.9 | 29.79 | 1008.8 | 30.29 | 1025.7 | 30.79 | 1042.7 | 31.29 | 1059.6 |
| 27.80 | 941.4 | 28.30 | 958.3 | 28.80 | 975.3 | 29.30 | 992.2 | 29.80 | 1009.1 | 30.30 | 1026.1 | 30.80 | 1043.0 | 31.30 | 1059.9 |
| 27.81 | 941.8 | 28.31 | 958.7 | 28.81 | 975.6 | 29.31 | 992.6 | 29.81 | 1009.5 | 30.31 | 1026.4 | 30.81 | 1043.3 | 31.31 | 1060.3 |
| 27.82 | 942.1 | 28.32 | 959.0 | 28.82 | 976.0 | 29.32 | 992.9 | 29.82 | 1009.8 | 30.32 | 1026.8 | 30.82 | 1043.7 | 31.32 | 1060.6 |
| 27.83 | 942.4 | 28.33 | 959.4 | 28.83 | 976.3 | 29.33 | 993.2 | 29.83 | 1010.2 | 30.33 | 1027.1 | 30.83 | 1044.0 | 31.33 | 1061.0 |
| 27.84 | 942.8 | 28.34 | 959.7 | 28.84 | 976.6 | 29.34 | 993.6 | 29.84 | 1010.5 | 30.34 | 1027.4 | 30.84 | 1044.4 | 31.34 | 1061.3 |
| 27.85 | 943.1 | 28.35 | 960.0 | 28.85 | 977.0 | 29.35 | 993.9 | 29.85 | 1010.8 | 30.35 | 1027.8 | 30.85 | 1044.7 | 31.35 | 1061.6 |
| 27.86 | 943.4 | 28.36 | 960.4 | 28.86 | 977.3 | 29.36 | 994.2 | 29.86 | 1011.2 | 30.36 | 1028.1 | 30.86 | 1045.0 | 31.36 | 1062.0 |
| 27.87 | 943.8 | 28.37 | 960.7 | 28.87 | 977.7 | 29.37 | 994.6 | 29.87 | 1011.5 | 30.37 | 1028.4 | 30.87 | 1045.4 | 31.37 | 1062.3 |
| 27.88 | 944.1 | 28.38 | 961.1 | 28.88 | 978.0 | 29.38 | 994.9 | 29.88 | 1011.9 | 30.38 | 1028.8 | 30.88 | 1045.7 | 31.38 | 1062.6 |
| 27.89 | 944.5 | 28.39 | 961.4 | 28.89 | 978.3 | 29.39 | 995.3 | 29.89 | 1012.2 | 30.39 | 1029.1 | 30.89 | 1046.1 | 31.39 | 1063.0 |
| 27.90 | 944.8 | 28.40 | 961.7 | 28.90 | 978.7 | 29.40 | 995.6 | 29.90 | 1012.5 | 30.40 | 1029.5 | 30.90 | 1046.4 | 31.40 | 1063.3 |
| 27.91 | 945.1 | 28.41 | 962.1 | 28.91 | 979.0 | 29.41 | 995.9 | 29.91 | 1012.9 | 30.41 | 1029.8 | 30.91 | 1046.7 | 31.41 | 1063.7 |
| 27.92 | 945.5 | 28.42 | 962.4 | 28.92 | 979.3 | 29.42 | 996.3 | 29.92 | 1013.2 | 30.42 | 1030.1 | 30.92 | 1047.1 | 31.42 | 1064.0 |
| 27.93 | 945.8 | 28.43 | 962.8 | 28.93 | 979.7 | 29.43 | 996.6 | 29.93 | 1013.5 | 30.43 | 1030.5 | 30.93 | 1047.4 | 31.43 | 1064.3 |
| 27.94 | 946.2 | 28.44 | 963.1 | 28.94 | 980.0 | 29.44 | 997.0 | 29.94 | 1013.9 | 30.44 | 1030.8 | 30.94 | 1047.7 | 31.44 | 1064.7 |
| 27.95 | 946.5 | 28.45 | 963.4 | 28.95 | 980.4 | 29.45 | 997.3 | 29.95 | 1014.2 | 30.45 | 1031.2 | 30.95 | 1048.1 | 31.45 | 1065.0 |
| 27.96 | 946.8 | 28.46 | 963.8 | 28.96 | 980.7 | 29.46 | 997.6 | 29.96 | 1014.6 | 30.46 | 1031.5 | 30.96 | 1048.4 | 31.46 | 1065.4 |
| 27.97 | 947.2 | 28.47 | 964.1 | 28.97 | 981.0 | 29.47 | 998.0 | 29.97 | 1014.9 | 30.47 | 1031.8 | 30.97 | 1048.8 | 31.47 | 1065.7 |
| 27.98 | 947.5 | 28.48 | 964.4 | 28.98 | 981.4 | 29.48 | 998.3 | 29.98 | 1015.2 | 30.48 | 1032.2 | 30.98 | 1049.1 | 31.48 | 1066.0 |
| 27.99 | 947.9 | 28.49 | 946.8 | 28.99 | 981.7 | 29.49 | 998.6 | 29.99 | 1015.6 | 30.49 | 1032.5 | 30.99 | 1049.4 | 31.49 | 1066.4 |

## 4-15. RADIO COMMUNICATIONS TRANSFER

Transfer radio communications by specifying to the aircraft the location name of the facility to be contacted.

*Phraseology:*

CONTACT (name of facility) ON (frequency)

Omit the location name when transferring communications to another specialist within your facility.

**Examples. —**

"CONTACT FLIGHT WATCH ON ONE TWO TWO POINT ZERO."

"CONTACT RADIO ON ONE TWO TWO POINT SIX."

## 4-16. ATC CLEARANCES, ADVISORIES, OR REQUESTS

Notify ATC via interphone of a pilot's request for clearance and include the airport of departure in the request. Relay ATC clearances, advisories, and requests verbatim. When clearances include a release or void time, give a time check when relaying the clearance.

**b.** Prefix all ATC clearances advisories, or requests with the appropriate phrase "ATC CLEARS," "ATC ADVISES," etc.

**c.** When issuing information, relaying clearnaces, or instructions, ensure acknowledgement by the pilot.

**d.** If altitude, heading, or other items are read back by the pilot, ensure the readback is correct. If incorrect or incomplete, make correction as appropriate.

**Note.—** Pilots may acknowledge clearances, instructions, or information by using "Wilco," "Roger," "Affirmative," or other appropriate words or remarks. (Reference AIM paragraph 192c.)

## 4-17. DEPARTURE REPORTS

When an aircraft which has filed an IFR flight plan requests a VFR departure through a terminal facility, FSS, or remote communication facility:

**a.** After obtaining approval from the facility/sector responsible for issuing the IFR clearance, an aircraft planning IFR flight may be authorized to depart VFR. Inform the pilot of the proper frequency and, if appropriate, where or when to contact the facility responsible for issuing the clearance.

*Phraseology:*

VFR DEPARTURE AUTHORIZED. CONTACT (facility) ON (frequency) AT (location or time, if required) FOR CLEARANCE.

**b.** If the facility/sector responsible for issuing the clearance is unable to issue a clearance, inform the pilot and suggest that the delay be taken on the ground. If the pilot insists upon taking off VFR and obtaining an IFR clearance in the air, inform the facility/sector holding the flight plan of the pilot's intentions and, if possible, the VFR departure time.

**c.** Immediately after an aircraft is airborne, or such a report is received, transmit the aircraft identification and departure time to the control facility from which you received the clearance.

**Note.—** This includes known VFR departure times of aircraft which are to obtain IFR clearances when airborne.

## 4-18. FLIGHT PROGRESS REPORTS

Interphone to the appropriate ATC facility the aircraft identification, position, time, altitude, estimate of next reporting point, name of subsequent reporting point, and any pilot remarks or requests including amended flight plan data.

## 4-19. ARRIVAL/MISSED APPROACH REPORTS

Relay to the appropriate ATC facility, by the most expeditious means available, the time that an IFR aircraft lands, cancels, or executes a missed approach.

## 4-20. NON-DELIVERY OF MESSAGES

Inform ATC when a message has not been delivered:

**a.** Within 3 minutes of receipt; or,

**b.** Within 3 minutes after the specified delivery time; or,

**c.** By a specified cancellation time.

## 4-21. BROADCAST (BLIND TRANSMISSION) OF MESSAGES

Broadcast messages as requested by ATC. If no accompanying transmitting instructions are received, transmit the message 4 times—once on receipt and at approximately three-minute intervals thereafter.

## 4-22. PENETRATION OF POSITIVE CONTROL AIRSPACE (PCA)

If a VFR aircraft position report indicates penetration of positive control airspace:

**a.** Inform the pilot about the positive control airspace and request his intentions.

**b.** Inform the ARTCC (control facility) immediately.

## 4-23. thru 4-25. RESERVED

## Section 3. INTERPHONE COMMUNICATIONS

### 4-26. INTERPHONE TRANSMISSION PRIORITIES

Give priority to interphone transmissions as follows:

**a.** *First priority.* Emergency messages including essential information on aircraft accidents or suspected accidents. After actual emergency has passed, give a lower priority to messages relating to that accident.

**b.** *Second priority.* Clearance and control instructions.

**c.** *Third priority.* Movement and control messages using the following order of preference when possible:

1. Progress reports.
2. Departure or arrival reports.
3. Flight plans.

**d.** *Fourth priority.* Movement messages on VFR aircraft.

### 4-27. PRIORITY INTERRUPTION

Use the words "emergency" or "control" to interrupt lower priority messages when you have an emergency or control message to transmit.

### 4-28. MESSAGE TERMINATION

Terminate interphone messages with your operating initials. Examples of Service F communications:

**a.** Manual signaling:

FAA—(signals center manually)

Center—"Salt Lake City Center" (or "Sector D5").

FSS—"Missoula radio, Missoula progress Apache 1234."

Center—"Go ahead."

FSS—"Over Missoula...etc. HB."

Center—"CT."

**b.** Voice signaling:

Center—"Portland Radio this is Seattle Center, clearance."

FSS—"Portland Radio, go ahead."

Center—"Army Four Five Zero Six Two cleared to ... etc. BS"

FSS—"IR."

### 4-29. RESERVED

## Section 4. RADIO AND INTERPHONE PHRASEOLOGY

### 4-30. EMPHASIS FOR CLARITY

Emphasize appropriate digits, letters, or similar sounding words to aid in distinguishing between similar sounding aircraft identifications.

Additionally:

**a.** Notify each pilot concerned when communicating with aircraft having similar sounding identifications.

**Examples. —**

"American five twenty one and American twenty one, transmissions being made to each of you on this frequency."

"Advisory to Cessna one three two four, transmissions to Cessna one two three four also being made on this frequency."

**b.** When initiating calls on interphone voice lines, identify the line on which the call is being made.

**Examples. —**

"Martinsburg Radio, this is Washington Center on the 64 line, clearance."

"Indianapolis Center, Dayton Radio on the Departure 82 line."

### 4-31. ICAO PHONETICS

Use the ICAO pronunciation of numbers and, as necessary to clarify individual letters, the ICAO radiotelephony alphabet and pronunciation in the following Table.

**2-84 Table.** — ICAO Phonetics

| Character | Word | Pronunciation |
|---|---|---|
| 0 | Zero | ZE—RO |
| 1 | One | WUN |
| 2 | Two | TOO |
| 3 | Three | TREE |
| 4 | Four | FOW—ER |
| 5 | Five | FIFE |
| 6 | Six | SIX |
| 7 | Seven | SEV—EN |
| 8 | Eight | AIT |
| 9 | Nine | NIN—ER |
| A | Alfa | AL FAH |
| B | Bravo | BRAH VOH |
| C | Charlie | CHAR LEE |
| D | Delta | DELL TAH |
| E | Echo | ECK OH |
| F | Foxtrot | FOKS TROT |
| G | Golf | GOLF |
| H | Hotel | HOH TELL |
| I | India | IN DEE AH |
| J | Juliett | JEW LEE ETT |
| K | Kilo | KEY LOH |
| L | Lima | LEE MAH |
| M | Mike | MIKE |
| N | November | NO VEM BER |
| O | Oscar | OSS CAH |
| P | Papa | PAH PAH |
| Q | Quebec | KEH BECK |
| R | Romeo | ROW ME OH |
| S | Sierra | SEE AIR AH |
| T | Tango | TANG GO |
| U | Uniform | YOU NEE FORM |
| V | Victor | VIK TAH |
| W | Whiskey | WISS KEY |
| X | X-ray | ECKS RAY |
| Y | Yankee | YANG KEY |
| Z | Zulu | ZOO LOO |

Note: Syllables to be emphasized in pronunciation are in bold face.

### 4-32. WORDS AND PHRASES

Use the words or phrases in radiotelephone and interphone communications, as contained in the "Pilot/Controller Glossary" (see **Appendix A**).

### 4-33. NUMBER USAGE

State numbers as follows:

**a.** Serial numbers—the separate digits

**Example: —**

| Number | Statement |
|---|---|
| 11,495 | "One one four niner five." |
| 20,069 | "Two zero zero six niner." |

**b.** Altitudes or flight levels;

1. Altitudes—the separate digits of the thousands plus the hundreds.

**Example. —**

| Altitude | Statement |
|---|---|
| 17,900 | "One seven thousand niner hundred." |

2. Flight levels—the words "flight level" followed by the separate digits of the flight level.

**Examples. —**

| Flight Level | Statement |
|---|---|
| 180 | "Flight level one eight zero." |
| 275 | "Flight level two seven five." |

**c.** General time information—the 4 separate digits of the hour and minutes, based on the 24-hour clock in terms of Coordinated Universal Time (UTC).

**Examples. —**

| Time (12 hr.) | Time (24 hr.) | Statement |
|---|---|---|
| 1:15 a.m. | 0115 | "Zero one one five." |
| 1:15 p.m. | 1315 | "One three one five." |

2. Upon request—the 4 separate digits of the hours and minutes in term of UTC, followed by local standard time equivalents.

**Example. —**

| Time | Statement |
|---|---|
| 1430 PST (2230 UTC) | "Two two three zero Coordinated Universal, one four three zero Pacific." |

3. Time check—the word "time" followed by the separate digits of the hour, minutes, and nearest quarter minute.

**Example. —**

| Time | Statement |
|---|---|
| 1415 ¼ | "Time, one four one five and one-quarter." |

4. Abbreviated time—the separate digits of the minutes only.

**Examples. —**

| Time | Statement |
|---|---|
| 1415 | "One five." |
| 1420 | "Two zero." |

**d.** Field elevation—the words "field elevation," followed by the separate digits of the elevation.

**Examples. —**

| Statement | Elevation |
|---|---|
| "Field elevation, one seven." | 17 feet |
| "Field elevation, one eight seven." | 187 feet |
| "Field elevation, two eight one seven." | 2817 feet |

**e.** The number "0," except where it appears in the group form—the word "zero."

**Examples. —**

"Field elevation one six zero."

"Cessna one six zero seven."

**f.** Altimeter setting—the word "altimeter," followed by the separate digits of the altimeter setting.

**Example. —**

| Setting | Statement |
|---|---|
| 30.01 | "Altimeter, three zero zero one." |

**g.** Surface wind—the word "wind," followed by separate digits of the indicated wind direction to the nearest 10-degree multiple, the word "at," and the separate digits of the indicated velocity in knots.

**Examples. —**

"Wind, zero three zero at two five."

"Wind, two seven zero at one five peak gusts three five."

**h.** Heading—the word "heading," followed by the 3 separate digits of the number of degrees, but omit the word "degrees." Use heading 360 degrees to indicate a north heading.

**Examples. —**

| Heading | Statement |
|---|---|
| 5 degrees | "Heading, zero zero five." |
| 30 degrees | "Heading, zero three zero." |
| 360 degrees | "Heading, three six zero." |

**i.** Radar beacon codes—the separate digits of the 4-digit code.

**Examples. —**

| Code | Statement |
|---|---|
| 1000 | "One zero zero zero." |
| 2100 | "Two one zero zero." |

**j.** Runways—the word "runway," followed by the separate digits of the runway designation. For a parallel runway, state the word "left," "right," or "center," if the letter "L," "R," or "C" is included in the designation.

**Examples. —**

| Designation | Statement |
|---|---|
| 3 | "Runway three." |
| 8L | "Runway eight left." |
| 27R | "Runway two seven right." |

**k.** Frequencies—the separate digits of the frequency, inserting the word "point" where the decimal occurs. Omit digits after the second digit to the right of the decimal point. When the frequency is in the L/MF band, include the word "kilohertz."

**Examples. —**

| Frequency | | Statement |
|---|---|---|
| 126.55 | MHz | "One two six point five five." |
| 369.0 | MHz | "Three six niner point zero." |
| 121.5 | MHz | "One two one point five." |
| 135.275 | MHz | "One three five point two seven." |
| 302 | kHz | "Three zero two kilohertz." |

**l.** Speeds—the separate digits of the speed followed by the words "knots."

**Examples. —**

| Speed | Statement |
|---|---|
| 250 | "Two five zero knots." |
| 185 | "One eight five knots." |
| 95 | "Niner five knots." |

**m.** Miles—the separate digits of the mileage followed by the word "mile/s."

**Example. —**

| Miles | Statement |
|---|---|
| 30 miles | "Three zero mile arc east of Nottingham." |

## 4-34. FACILITY IDENTIFICATION

Identify facilities as follows:

**a.** Airport traffic control towers—state the name of the facility, followed by the word "tower." Where military and civil airports are located in the same general area and have similar names, state the name of the military service, followed by the name of the military facility and the word "tower."

**Examples. —**

"Columbus Tower."

"Barksdale Tower."

"Navy Jacksonville Tower."

**b.** Air route traffic control centers—state the name of the facility, followed by the word "center."

**Example. —**

"Fort Worth Center."

**c.** Approach control facilities, including RAPCON's, RATCF's, and ARAC's — state the name of the facility, followed by the word "approach." Where military and civil facilities are located in the same general area and have similar names, state the name of the military service, followed by the name of the military facility and the word "approach."

**Examples. —**

"Denver Approach."

"Griffiss Approach."

"Patuxent Approach."

"Navy Jacksonville Approach."

**d.** Function within a terminal facility—state the name of the facility, followed by the name of the function.

**Examples. —**

"Boston Departure."

"LaGuardia Clearance Delivery."

"O'Hare Ground."

**e.** When calling or replying on an interphone line which connects only 2 facilities, you may omit the facility name.

**f.** Communications stations:

1. FAA flight service stations—state the name of the station, followed by the word "radio."

**Example. —**

"Bellingham Radio."

2. Air Force—state the name of the station, followed by the word "airways"

**Example. —**

"Brookley Airways."

3. Navy—state the word "Navy," followed by the name of the station and the word "radio."

**Example. —**

"Navy Jacksonville Radio."

**g.** Radar facilities having ASR or PAR but not providing approach control service—state the name of the facility, followed by the letters "G-C-A."

**Examples. —**

"Chanute G-C-A."

"Corpus Christi G-C-A."

"Davison G-C-A."

## 4-35. AIRCRAFT IDENTIFICATION

Use the full identification in reply to aircraft with similar sounding identifications. For other aircraft, the same identification may be used in reply that the pilot used in his initial call up except use the correct identification after communications have been established.

**a.** Civil—state the aircraft type, model name, manufacturer's name, or the prefix "November," followed by the registration.

**Examples. —**

"Jet Commander one four two four."

"Douglas three zero five Romeo."

"Bonanza one two three four Tango."

"One zero X-ray Yankee."

"November one two three four Golf."

**Note.**—The prefix "November" denotes U.S. aircraft registry.

1. Aircarrier and other civil aircraft having FAA authorized call-signs — state the call-sign followed by the flight number in group form.

**Examples.** —

"American five twenty-five."

"Commuter six eleven."

"General Motors thirty-seven."

2. Air taxi and commercial operators not having FAA authorized call signs—state the prefix "TANGO" on initial contact, if used by the pilot, followed by the registration number. The prefix may be dropped in subsequent communications.

**Examples.** —

"Tango one two three four."

"Tango Mooney five five five two Quebec."

3. If aircraft identification becomes a problem when the procedures specified in (1) above are used, the call sign shall be restated after the flight number(s) of the aircraft involved.

**Examples.** —

"American five twenty-five American."

"Commuter six eleven Commuter."

"General Motors thirty-seven General Motors."

**b.** Civilian airborne ambulance—state the word "Lifeguard" followed by the type, digits, and letters of the registration number.

**Example.** —

"Lifeguard Cessna two six three Kilo."

**c.** U.S. Military—State one of the following:

1. The service name, followed by the last 5 digits of the serial number.

**Examples.** —

"Navy five six seven one three."

"Coast Guard six one three two seven."

"Air Guard one three five eight six."

2. Special military operations—state one of the following, followed by the last 5 digits of the serial number:

(a) Air evacuation flights—"AIR EVAC," "MARINE AIR EVAC," or "NAVY AIR EVAC."

(b) Rescue flights—"RESCUE."

(c) Helicopters—"(Service name) COPTER."

(d) Military Airlift Command—"MAC."

(e) Special Air Mission—"SAM."

(f) USAF Contract Aircraft—"LOGAIR."

**Examples.** —

"AIR EVAC one seven six five two."

"RESCUE six one five seven niner."

"NAVY COPTER three two one seven six."

"MAC seven eight five six two."

"SAM niner one five six two."

"LOGAIR seven five eight two six."

**Note.** — The word "copter" need not be used in transmissions initial contact.

3. Military tactical and training:

(a) U.S. Air Force, Air National Guard, Military District of Washington priority aircraft, and USAF civil disturbance aircraft—pronounceable words of 3, 4, 5, or 6 letters followed by a 4, 3, 2, or 1-digit number.

**Examples.** —

"Paul two zero."

"Pat one five seven."

"Gaydog four."

**Note.** — To identify IFR aircraft piloted by solo USAF undergraduate pilots, the letter "Z" will be added. Do not use this suffix however, in ground to air communications.

(b) Navy or Marine fleet and training command aircraft—the service name and 2 letters or a digit and a letter (use letter phonetic equivalents), followed by 2 or 3 digits.

**Examples.** —

"Navy Golf Alfa two one."

"Marine four Charlie two three six."

(c) NORAD interceptors—an assigned double letter 2-digit flight number.

**Example.** —

"Alfa Kilo one five."

**Note.** — If aircraft identification becomes a problem procedures in **paragraph 4-35a.(3)** will apply.

**d.** Foreign registry—state one of the following:

1. Civil—the letters or digits of the aircraft registration or call sign.

**Example.** —

"C-F-L-R-B."

2. Air carrier—the abbreviated name of the operating company, followed by:

(a) The letters or digits of the registration or radio call sign.

**Example.** —

"Air France F-L-R-L-G."

(b) The flight number in group form.

**Example.** —

"Scandinavian sixty-eight."

3. Military, except Canada, the name of the country and the military service followed by the last 4 digits or letters of the registration or call sign. Canadian armed force aircraft shall be identified by the word "CANFORCE" followed by the separate digits of the serial number except that the Transport Command of the Canadian Armed Forces shall be identified by the words "CANADIAN MILITARY" and the Canadian Coast Guard

shall be identified as "CANADIAN COAST GUARD" followed by the last 4 digits of the serial number.

**Examples. —**

"CANFORCE five six two seven."

"Brazilian Air Force five three two seven six."

**e.** Presidential aircraft and Presidential family aircraft:

1. When the President is aboard a military aircraft, state the name of the military service, followed by the word "one."

**Examples. —**

"Air Force one."

"Army one."

"Marine one."

2. When the President is aboard a civil aircraft, state the words "Executive One."

3. When a member of the President's family is aboard any aircraft, if the Secret Service or the White House Staff determines it is necessary, state the words "Executive One Foxtrot."

**f.** Vice Presidential aircraft:

1. When the Vice President is aboard a military aircraft, state the name of the military service, followed by the word "two."

**Examples. —**

"Air Force two."

"Army two."

"Marine two."

2. When the Vice President is aboard a civil aircraft, state the words "Executive Two."

3. When a member of the Vice President's family is aboard any aircraft, if the U.S. Secret Service or the White House Staff determines it is necessary, state the words "Executive Two Foxtrot."

**g.** Other special flights:

1. Department of Energy flights—state the letters "RAC" (use phonetic alphabet equivalents) followed by the last 4. separate digits of the aircraft registration number.

**Example. —**

"Romeo Alfa Charlie one six five three."

2. Semiautomatic Flight Inspections—state the code name SAFI" followed by the separate digits of the grid number as filed.

**Example. —**

"Denver Center, this SAFI five two seven."

3. Flight Inspection of Navigational Aids—state the call sign "Flight Check" followed by the digits of the registration number.

**Example. —**

"FLIGHT CHECK three niner six five four."

**h.** Use a pilot's name in identification of an aircraft only in special or emergency situations.

## 4-36. DESCRIPTION OF AIRCRAFT TYPES

Describe aircraft as follows:

**a.** Military:

1. Military designator, with number spoken in group form.

2. Service and type.

3. Type only, if no confusion or misidentification is likely.

**Examples. —**

"F-Four."

"Air Force fighter."

"Fighter."

**b.** Air Carrier:

1. Manufacturer's name and model.

2. Add company name or other identifying features when confusion or misunderstanding is likely.

**Examples. —**

"Electra."

"Seven-oh-seven."

"American DC-nine."

**c.** General Aviation and Air Taxi:

1. Manufacturer's model, name or designator.

2. Add color when considered advantageous.

**Examples. —**

"Tri-pacer."

"PA-twenty-two."

"Cessna three-ten."

"Green Apache."

## 4-37. AIRWAYS AND ROUTES

Describe route airways or jet routes as follows:

**a.** VOR/VORTAC/TACAN airways or jet routes—state the word "victor" or the letter "J," followed by the number of the airway or route in group form.

**Examples. —**

"Victor twelve." (the word "ROMEO" when RNAV)

"J five thirty three." (the word "ROMEO" when RNAV) word "ROMEO" when RNAV)

**b.** VOR/VORTAC/TACAN alternative airways—state the word "victor," followed by the number of the airway in group form and the alternative direction.

**Example. —**

"Victor twelve south."

**c.** L/MF airways—state the color of the airway, followed by the number in group form.

**Example. —**

"Blue eighty one."

**d.** North American Route—state the words "North American Route" followed by the number of the route in group form.

**Example. —**

"North American Route Fifty."

## 4-38. NAVAID TERMS

Describe radials, arcs, courses, and bearings on NAVAIDS as follows:

**a.** VOR/VORTAC/TACAN—state the name of the NAVAID, followed by the separate digits of the magnetic bearing of the radial (omitting the word "degrees"), and the word "radial."

**Example. —**

"Appleton zero five zero radial."

**b.** Arcs about VOR-DME/VORTAC/TACAN NAVAIDS—state the distance in miles from the NAVAID, followed by the words "mile arc," the direction from the NAVAID in terms of the 8 principal points of the compass, the word "of," and the name of the NAVAID.

**Example. —**

"One five mile arc southwest of Grantsville."

**c.** L/MF NAVAIDS—state the name of the station, followed by the bearing of the course from the station in terms of the 8 principal points of the compass and the word "course."

**Example. —**

"Roswell northeast course."

**d.** Nondirectional beacons—state the course to, or bearing from, the radio beacon, omitting the word "degree," followed by the words "magnetic course to" or "magnetic bearing from," the name of the radio beacon and the words "radio beacon."

**Example. —**

"Three four zero magnetic bearing from Randolph Radio Beacon."

## 4-39. NAVAID FIXES

Describe fixes determined by reference to a radial and distance from a VOR-DME/VORTAC/TACAN as follows:

**a.** When a fix is not named—state the name of the NAVAID followed by the specified radial/localizer and state the distance in miles followed by the phrase "*mile fix.*"

**Example. —**

"Appleton zero five zero radial three seven mile fix."

**b.** When a fix is named—state the name of the fix, followed by the phrase "D-M-E FIX or WAYPOINT, as appropriate."

**Example. —**

"James D-M-E Fix."

"James Waypoint."

**c.** When accepting flight plans for random RNAV routes, ensure the route is described by waypoints in terms of degree-distance fixes.

## 4-40. thru 4-49. RESERVED

## Section 5. MONITORING

### 4-50. DUTIES

When the Air Traffic Division has assigned your facility the responsibility for monitoring NAVAIDS, take the following actions, as appropriate:

**a.** VOR/VORTAC

1. Aurally check the identification at the beginning of each watch.

**Note. —** Upon commissioning of second generation (FA-9996) VOR, aural monitoring is not required.

2. Record the check on FAA Form 7230-4.

3. If a monitor category 2 exists, notify the center.

**Note 1. —** VOR's VORTAC's and TACAN's have an automatic course alignment and signal monitor (ACM). This monitor is usually connected to a remote alarm. An automatic transfer and shutdown unit (ATU) is installed as part of the ACM. When the ACM detects a malfunction, the ATU switches the range to a standby transmitter. If the standby transmitter does not work properly, the ATU will shut down the facility.

**Note 2. —** Monitoring of VOR test signals (VOT) is accomplished by a light or buzzer monitor and is of local concern only.

**Note 3. —** VOR and VORTAC monitor categories:

(a) Category 1—alarm feature and identification heard at control point.

(b) Category 2—monitor equipment failure and identification not heard at control point but aircraft reports indicate facility operating normally.

(c) Category 3—not constantly monitored by other than ACM and ATU.

**b.** TACAN (joint use airports):

1. Aurally check the identification at the beginning of each watch.

2. Immediately notify the responsible military authority when an alarm is received.

3. Consider the aid inoperative when the alarm cannot be silenced and the identification cannot be heard on the aural monitor.

**Note 1. —** The military authority will issue NOTAMs for TACAN's.

**Note 2. —** *Alaska* Tie-in facilities shall transmit Notices to Airmen originated by military officials on military aids.

**c.** DME (monitored by the same facility that monitors the associated VOR, VORTAC, or ILS):

1. Press the VORW/DME control oscillator lever to "facility on" position at the beginning of each watch.

2. Record the check on FAA Form 7230-4.

**d.** NDB (class HH, H, and MH):

1. Monitor continuously by automatic means beacons used as IFR aids.

2. Check operations at least once each hour if an automatic alarm is not available.

**e.** ILS:

1. Check the ILS monitor panel at the beginning of each watch and record the system status on Form 7230-4.

2. When there are indications that a component (localizer, glide path, outer marker, middle marker) has failed, shut off that component and allow the rest of the system to continue operating.

**Note. —** Not all ILS components will be provided with remote monitor and control lines (on/off capability). If the failure indication is caused by a control line or control station monitor failure the Airways Facility technician shall advise if that component will be restored to operation and the monitor status.

**f.** Compass Locators:

1. Monitor continuously by automatic means.

2. Check the operation at least once each hour if an automatic alarm is not available.

3. If the provisions of (1) or (2) cannot be met, the compass locator may be consider monitored if it is equipped with an automatic monitor and shutdown feature at the site. In this case responsibility for monitoring shall not be assigned to the air traffic facility.

**g.** DF Equipment:

1. Compare the DF indication and the bearing of a known transmitter site once each watch.

2. Check the reception of all frequencies once each day if there is a suitable signal available.

### 4-51. MALFUNCTIONS

Take the following action when the alarm signal or a report indicates an AT system component malfunctions:

**a.** Try to restore the aid to normal operation.

**b.** If unable to restore it, discontinue its use and:

(1.) Notify the appropriate IFR control facility/sector.

(2.) Notify the appropriate FSS as necessary.

(3.) Notify AF personnel in accordance with Order 6030.31, Restoration of Operational Facilities.

(4.) Issue any necessary NOTAM and take other NOTAM related actions as appropriate.

**Reference.—**7210.3 paragraph 350 and 7930.2 paragraph 523.

**Note. —** When AF personnel silence the monitoring systems of any NAVAID, they will assume responsibility for the monitoring function.

### 4-52. AIRCRAFT-REPORTED MALFUNCTIONS

When an aircraft reports a NAVAID malfunction, take the following actions:

**a.** Request a report from a second aircraft.

**b.** If the second aircraft reports normal operations, continue use, and inform the first aircraft. Record the incident on FAA Form 7230-4, Daily Record of Facility Operation, or appropriate Military Form.

**c.** If the second aircraft confirms the malfunction or in the absence of a second aircraft report, activate the standby equipment or request the monitor facility to activate, as appropriate.

**d.** If normal operation is reported after the standby equipment is activated, continue use, record the incident on FAA Form 7230-4 or appropriate Military Form and notify maintenance personnel (the Systems Engineer of the ARTCC when an en route aid is involved), as appropriate.

**e.** If continued malfunction is reported after the standby equipment is activated or the standby equipment cannot be activated, inform maintenance personnel and request advice on whether or not the aid should be shut down. In the absence of a second aircraft report, advise the maintenance personnel of the time of the initial aircraft report and the estimated time a second aircraft report could be obtained.

**Note 1. —** The sequence of the actions are not intended to circumvent good judgment should the circumstances under which the malfunction report is made so dictate.

### 4-53. ADJUSTMENTS TO NAVAIDS

Notify the appropriate air traffic control facility before any adjustment (including a transmitter change) to a VOR, TACAN, or DME transmitter is made which might cause a momentary interruption or an abnormal indication on aircraft instruments.

### 4-54. NAVAID FLIGHT CHECK

**a.** a. Provide aircraft engaged in flight inspection of NAVAIDS with maximum assistance. Unless otherwise agreed to, maintain direct contact with the pilot and exchange information regarding known traffic in the area and his intentions.

**Note 1. —** Many flight inspections are accomplished using automatic recording equipment and an uninterrupted flight is necessary for successful completion of the mission. The workload for the limited number of aircraft engaged in these activities requires strict adherence to a schedule.

**Note 2. —** Flight Inspection operations which require special participation of ground personnel, specific communications, or radar operation capabilities are considered to require special handling. These flights are coordinated with appropriate facilities before departure.

**Reference. —** Order 8200.1, U.S. Standard Flight Inspection Manual, and Order 8240.41, Flight Inspection/Air Traffic Coordination.

**b.** When notified (normally by the flight inspection aircraft) of a flight check that will include transmitter changes, take the following action:

1. Inform appropriate control facilities of anticipated transmitter changes and proposed duration of the flight check.
2. Change transmitters when requested.

### 4-55. MONITORING OF NAVAIDS BY AIRWAY FACILITIES PERSONNEL

Airway Facilities personnel may assume monitor of any navigational aid provided they coordinate with the responsible Air Traffic monitor facility. Record the time on FAA Form 7230-4 that Airway Facilities personnel monitor each NAVAID.

### 4-56. INTERPHONES AND RADIO

**a. INTERPHONE (Service F)**

Monitor interphone continuously. Keep speaker volumes at a sufficient level to hear all transmissions. Notify the control station and the local telephone company immediately when Service F fails.

**b. RADIO**

Monitor assigned radio frequencies continously. Keep speaker volume at a sufficient level to hear transmissions.

### 4-57. thru 4-69. RESERVED

## Section 6. STRIP MARKING

### 4-70. GENERAL

**a.** Use FAA Form 7230-21 or FAA Form 7233-5 to record flight progress data or in-flight pilot briefs. Teletypewriter flight notification messages may be used as substitutes. Use authorized control information symbols in combination with clearance symbols, abbreviations, location identifiers, and phrase contractions to the extent possible for recording position reports, traffic clearances and other data on flight progress strips. To provide flexibility, you may use:

**1.** Plain language markings to supplement the above when it will aid in understanding the recorded information.

**2.** Locally approved contractions and identifiers for frequently used terms and local fixes not listed in either the Contractions or the Location Identifiers Handbooks. Use these only within your facility and not on teletypewriter or interphone circuits. Copies of all locally approved contractions and identifiers shall be placed in facility files for record purposes.

**3.** Plain sheets of paper to record information when flight progress strip use is not feasible.

**4.** You may use blank paper to record lengthy ATC clearances or numerous contacts with the same aircraft in instances such as orientation or emergencies.

**b.** Display the Form 7233-1 at the in-flight position on proposed outbound flights which are expected to contact the station. Upon contact:

1. Record the contact.

2. Enter the departure time or time VFR flight plan was activated on Form 7233-1.

3. Give the pilot any new and pertinent briefing information.

4. Pass the Form 7233-1 to the appropriate operating position for delivery of the flight notification message. (Provide a means of displaying the form while data is being transmitted).

**c.** Use one flight progress strip for each flight, and record all contacts with that flight on the same strip. If supplemental strips are needed for additional writing space, keep the original and supplemental strips together and consider them as one strip.

### 4-71. STANDARD HAND PRINTED CHARACTERS

To prevent misinterpretation of data hand printed on flight progress strips use the standard hand printed characters shown below. To correct or update a posted item, draw a horizontal line through it and write the correct or current information immediately adjacent to it within the same space. Draw a line through previously assigned altitude only after the aircraft has reported leaving that altitude. Do not erase any item. When relaying data between facilities, transmit the information in the sequence specified in paragraph 4-72

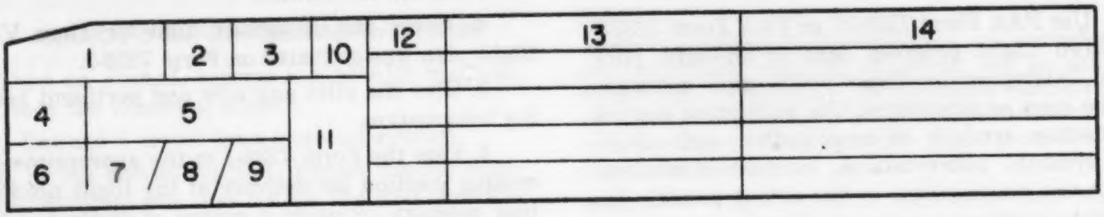
STANDARD RECORDING OF HAND PRINTED CHARACTERS

| Typed | Hand Printed | Typed | Hand Printed | Typed | Hand Printed | Typed | Hand Printed |
|---|---|---|---|---|---|---|---|
| A | A | J | J | S | S | 1 | 1 |
| B | B | K | K | T | T | 2 | 2 |
| C | C | L | L | U | U | 3 | 3 |
| D | D | M | M | V | V | 4 | 4 |
| E | E | N | N | W | W | 5 | 5 |
| F | F | O | O | X | X | 6 | 6 |
| G | G | P | P | Y | Y | 7 | 7 |
| H | H | Q | Q | Z | Z | 8 | 8 |
| I | I | R | R | | | 9 | 9 |
| | | | | | | 0 | *0 |

Illustration Sec 1,485

*The slant line cross through the numeral zero and the underline of the letter "s" on handwritten portion of the flight progress strips are required only when there is reason to believe the lack of these markings could lead to a misunderstanding. The slant line cross through the numeral zero is required on weather data.

## 4-72. FLIGHT PROGRESS STRIPS (FAA FORMS 7230-21 AND 7233-5)



Illustration

Use this form as follows:

**a.** Enter as may be required the following numbered items in the correspondingly numbered spaces illustrated above:

1. Aircraft identification.

**Note. —** To identify IFR aircraft piloted by solo USAF undergraduate pilots, the letter "Z" will be added. Do not use this suffix, however, in ground to air communications.

2. Type of aircraft and symbol for any special equipment; e.g., DME, RNAV, transponder.

3. Filed true airspeed and altitude, if IFR flight plan. Enter altitude for VFR or DVFR only if it is volunteered by the pilot.

4. Departure point.

5. Route of flight.

6. Destination airport.

7. Actual departure time or time VFR flight plan was activated.

8. Estimated time of arrival at destination.

9. Estimated time of fuel exhaustion.

10. Symbol to indicate type of flight. Use the symbols specified in paragraph 484a. In addition, use "I" to indicate IFR, "V" for VFR, "D" for DVFR, and "S" for Special VFR.

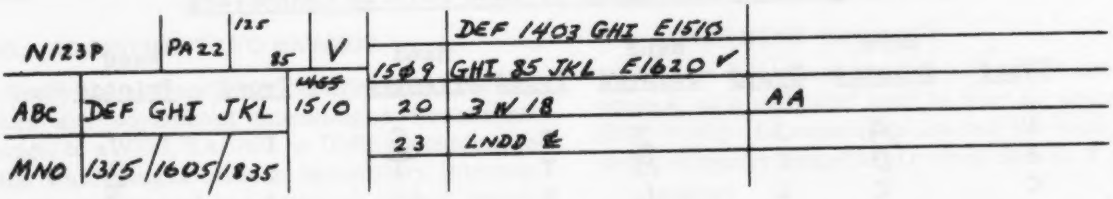
11. Action time (e.g., ETOV, 30-mile estimate, fuel exhaustion time, LR contact time).

12. Time of contact—omit if information recorded on the strip is received from sources other than the pilot.

13. Information received from the aircraft. Also enter any pertinent information received from another facility.

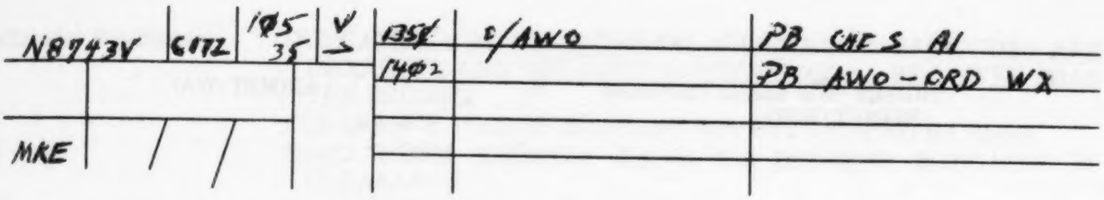
14. Data issued to the aircraft. Record ATC instructions and clearances completely and exactly. Briefly summarize or identify any other data using the symbols in paragraph 484b, if practicable. Do not record issuance of altimeter settings unless that is the only information provided during the contact.

**b.** Example of recording flight progress data:


N123P
PA22
125
85
V
DEF 1403 GHI E1510
1509 GHI 85 JKL E1620 ✓
ABc
DEF GHI JKL
~~1455~~
1510
20 3 W 18
AA
23 LNDD
MNO
1315
1605
1835

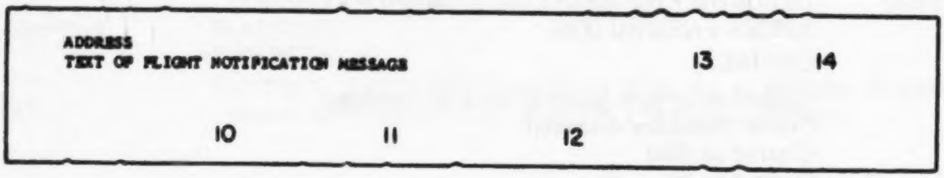
Illustration

**c.** Example of recording pilot brief by radio:



Illustration

**d.** When using teletypewriter flight notification messages, for recording flight progress data, cut or tear the paper to fit the strip holder. Enter items 10 through 14 in the correspondingly numbered locations illustrated below:



Illustration

## 4-73. AIRCRAFT CONTACTS

Record aircraft contacts as follows:

**a.** Use a flight progress strip or the teletypewriter copy of the proposal or flight notification message to record aircraft contacts.

**b.** If the flight is inbound or an "over" and the station has the aircraft's flight plan, post the contact on the strip containing the flight plan data.

**c.** If the flight is outbound and has filed a flight plan with the station, enter aircraft contact data only on the flight progress strip and indicate "FP" in the flight plan boxes to show this data is on a Form 7233-1 filed in the facility.

**d.** If there is no flight plan on file for the aircraft contacting the station, obtain and post the following information:

1. Aircraft identification.
2. Type of flight operation (I, V, or D).
3. Time of contact.
4. Aircraft contact record.
5. Other items which are operationally significant to the service rendered.

**e.** If a recorder is used at the inflight position, you may limit entries in the aircraft contact portion of the strip to those necessary for your use.

## 4-74. FLIGHT SERVICE SYMBOLS

**a.** For use in Box 10 of FAA Form 7230-21 and FAA Form 7233-5 to indicate type flight operation.

| | |
|---|---|
| → | OVER FLIGHT |
| ↓ | INBOUND |
| ↗ | OUTBOUND FLIGHT |
| LR | LAKE REPORTING |
| MR | MOUNTAIN REPORTING |
| IR | ISLAND REPORTING |

**b.** Miscellaneous:

| | |
|---|---|
| AA | Airport Advisory |
| BC | Back Course |
| CT | Contact Approach |
| CWT | Caution Wake Turbulence |
| DW | Downwind |
| FA | Final Approach |
| FP | Flight Plan recorded on FAA Form 7233-3 |
| MA | Missed Approach |
| NDB | Nondirectional Radio Beacon Approach |
| ILS | ILS Approach |
| PT | Procedure Turn |
| RY | Runway |
| RH | Runway Heading |
| VA | Visual Approach |
| VR | VOR Approach |
| VNR | VFR flight not recommended (pilot brief) |
| DA | Decided Against Flight |
| DD | Decided to Delay Flight |
| IC | Incomplete Briefing |
| PB | Pilot Brief |

| | | | |
|---|---|---|---|
| S | SIGMET (WS) and/or Convective SIGMET (WST) | A | AIRMET (WA) |

## 4-75. CONTROL INFORMATION SYMBOLS

| | |
|---|---|
| ↑ (Altitude) | CLIMB AND MAINTAIN (Altitude). |
| ↑ (Altitude) (Time)<br>(Fix) | CLIMB AND MAINTAIN (Altitude) AT (Time); or;<br>AFTER PASSING (Fix). |
| ↓ (Altitude) | DESCEND AND MAINTAIN (Altitude). |
| ↓ (Altitude) (Time)<br>(Fix) | DESCEND AND MAINTAIN (Altitude) AT (Time); or<br>AFTER PASSING (Fix). |
| → | CRUISE. |
| A | Cleared to airport (point of intended landing) |
| B | Center clearance delivered |
| CAF | Cleared as filed |
| F | Cleared to the _ fix |
| N | Clearance not delivered |
| T | Cleared through (for landing and takeoff through intermediate point) |
| @ | AT. |
| X | CROSS. |
| M→ | MAINTAIN. |
| O/ | Over (location) |
| A/ | Abeam (location) |
| =/ | JOIN OR INTERCEPT AIRWAY, JET ROUTE TRACK OR COURSE. |
| = | WHILE ON AIRWAYS. |
| △ | WHILE IN CONTROL AREA. |
| ↘△ | ENTER CONTROL AREA. |
| △↗ | OUT OF CONTROL AREA. |
| ➡ ↘○ | CLEARED TO ENTER CONTROL ZONE (direction). (Arrow may indicate direction aircraft is entering control zone, however, appropriate letter shall follow the symbol). MAINTAIN SPECIAL VFR CONDITIONS, (altitude, if appropriate), WHILE IN CONTROL ZONE. |
| ○↗ | CLEARED TO DEPART CONTROL ZONE (direction) (arrow may indicate direction aircraft will depart control zone, however, appropriate letter shall follow the symbol), MAINTAIN SPECIAL VFR CONDITIONS, (altitude if appropriate), WHILE IN CONTROL ZONE. |
| −⊖→ | CLEARED THROUGH CONTROL ZONE FROM (direction) TO (direction) (arrow may indicate direction of flight, however, appropriate letters shall follow the symbol), MAINTAIN SPECIAL VFR CONDITIONS (altitude, if appropriate), WHILE IN CONTROL ZONE. |
| > | BEFORE. |
| < | AFTER OR PAST. |
| T→; T→N | TAKEOFF (Direction, if specified). |
| / | UNTIL. |
| ( ) | ALTERNATE INSTRUCTIONS. |
| Restriction | RESTRICTION. |
| + | AT OR BELOW. |
| + | AT OR ABOVE. |
| − (dash) | INDICATES FROM−TO, ROUTE, TIME, etc. |

| | |
|---|---|
| (altitude) B (altitude) | INDICATES A BLOCK ALTITUDE ASSIGNMENT. ALTITUDES ARE INCLUSIVE AND THE FIRST ALTITUDE SHALL BE LOWER THAN THE SECOND. |
| V | CLEARANCE VOID IF AIRCRAFT NOT OFF GROUND BY (time). |
| S↑ or S↓ | USED WHEN SHUTTLE CLIMB OR DESCENT INDICATED IN CLEARANCE. |
| Ⓦ | LOCAL SPECIAL VFR OPERATIONS IN THE VICINITY OF (name) AIRPORT ARE AUTHORIZED UNTIL (time). MAINTAIN SPECIAL VFR CONDITIONS (altitude, if appropriate). |
| CL | PILOT CANCELLED FLIGHT PLAN. |
| ✓ | INFORMATION FORWARDED—Indicates information forwarded as required. |
| $\overset{\frown}{\text{(NM) (DRCTN)}}$ | VIA (number of miles) MILE ARC (direction) OF (name of DME aid). |
| TL | TURN LEFT |
| TR | TURN RIGHT |
| W (Red Marking) | WARNING. |
| E (Red) | EMERGENCY. |
| C (FREQ) | CONTACT (facility) ON (frequency) (time, fix or altitude, if appropriate). Insert the frequency only when it is other than standard. |

Note. —The absence of an airway or route number between two fixes in the route of flight indicates "direct"; no symbol or abbreviation is required.

**4-76. thru 4-79. RESERVED**

# Section 7. BROADCAST DUTY

## 4-80. GENERAL

Broadcast duty shall be performed in accordance with Chapter 2.

## 4-81. thru 4-89. RESERVED

## Section 8. AIRPORT ADVISORY SERVICE (AAS)

### 4-90. GENERAL

Airport Advisory Service (AAS) is a terminal service provided by FSS facilities located at airports without an operating control tower.

**Reference.**—7210.3 paragraph 1534.

### 4-91. FREQUENCY

Provide AAS on 123.6 MHz at nontower locations and on the tower local control frequency at an airport with a part-time FAA tower when that facility is not operating. Encourage aircraft to guard 123.6 MHz or the tower local control frequency, as appropriate, while within approximately a 10 mile radius of the airport. (If necessary, issue advisories on the frequency to which the pilot is listening.)

### 4-92. TRAFFIC CONTROL

Do not control air traffic. When there is no control tower in operation and a pilot appears unaware of this fact, inform him as follows:

*Phraseology:*

NO CONTROL TOWER IN OPERATION.

### 4-93. FAVORED RUNWAY

Select the runway most nearly aligned into the wind. If there is no wind, select the runway currently in use or the runway favored by shorter taxiway or other local consideration. When airport management has designated a runway to be used under certain wind or other conditions (and has informed the FSS in writing), issue runway information accordingly.

**a.** When a pilot advises he will use a runway other than the favored or designated runway, inform all known concerned traffic.

**b.** If a pilot requests the distance between an intersection and the runway end, furnish measured data from the local airport intersection takeoff diagram.

### 4-94. ELEMENTS OF AAS

Provide the following information, as appropriate, sequencing the elements to best serve the current traffic situation:

**a.** Wind direction and velocity.

**b.** Favored or designated runway.

**c.** Altimeter setting. However, unless specifically requested by the pilot, this need not be issued to local aircraft operators who have requested this omission in writing or scheduled air carriers. (Reference paragraph 4-14a)

**d.** Weather as follows:

1. Ceiling and visibility information to VFR aircraft when less than basic VFR conditions exist.

2. Visibility to VFR aircraft when it is less than 3 miles in any quadrant.

3. Where RVR/RVV readout equipment is readily available to the specialist providing airport advisory service, issue touchdown RVR/RVV for the runway in use in accordance with paragraphs 4-98 and 4-99.

4. To aircraft executing an instrument approach or departure and to the appropriate control facility when:

(a) Ceiling is less than one thousand feet or below the highest circling minimum, whichever is greater, or visibility is less than 3 miles.

(b) Special weather observations are received while weather conditions are as specified in (a), above.

**e.** To a departing aircraft—an advisory to "Check Density Altitude" whenever the field elevation/temperature combination meets the criterion contained in the Facility Operation and Administration, **7210.3-285.** Omit this advisory if a density altitude computation for that aircraft was included in the preflight briefing.

**f.** Factual information about observed or reported traffic which may constitute a collision hazard. This may include positions of aircraft in flight or aircraft and vehicles operating on the airport.

**Example. —**

"Tri-Pacer on downwind leg for Runway One Four."

**g.** Issue cautionary information to aircraft concerned, if you foresee the possibility of wake turbulence from an aircraft may have an adverse affect on another aircraft.

*Phraseology:*

CAUTION WAKE TURBULENCE (traffic information).

**Note. —** Since the existence and effect of turbulence is unpredictable, ATS personnel are not responsible for anticipating its existence or affect.

**h.** Notice to Airmen information concerning local NAVAIDs and field conditions pertinent to flight.

**i.** Factual information as reported by the airport management concerning the condition of the runway surface, describing the accumulation of precipitation. Furnish quality of braking action as received from pilots or the airport management to all aircraft as follows:

1. Describe the quality of braking action using the terms "good," "fair," "poor," or "NIL." If the pilot or airport management reports braking action in other than the foregoing terms, ask him to categorize braking action in these terms.

**Note. —** For bad or no braking action use "NIL."

2. Include type of aircraft or vehicle from which the report is received.

**Examples. —**

"All runways covered by compacted snow 6 inches deep."

"Braking action poor, reported by an F27."

3. If the braking action report affects only a portion of a runway, obtain enough information from the pilot or airport management to describe braking action in terms easily understood by the pilot.

**Examples. —**

"Braking action poor first half of runway, reported by a G-2."

"Braking action poor beyond the intersection of Runway 27, reported by a B-727."

**Note. —** Descriptive terms such as first/last half of the runway should normally be used rather than landmark descriptions such as opposite the fire station, south of a taxiway, etc.

**j.** Runway friction measurement readings/values as received from airport management to aircraft as follows:

1. At locations where friction measuring devices, such as Mu-Meter, Saab Friction Tester (SFT), and Skiddometer are in use, furnish information as received from the airport management to pilots on request. Use the name of the device followed by the number for each of three runway segments, a word describing the cause of the runway friction problem, and the time of the report.

**Example. —**

"(Name of device), eight six, seven snow at zero niner three zero."

"(Name of device), thirty-five twenty six, thirty, sleet at one zero one five."

2. Issue the RUNWAY SURFACE CONDITION and/or the RUNWAY CONDITION READING (RCR), if provided, to all USAF and ANG aircraft. Issue the RCR to other aircraft upon request.

**Example. —** "Ice on runway, RCR zero five, patchy."

**Note. —** USAF has established RCR procedures for determining the average deceleration readings of runways under conditions of water, slush, ice, or snow. The use of RCR code is dependent upon the pilot's having a "stopping capability chart" specifically applicable to his aircraft. USAF offices furnish RCR information at airports serving USAF and ANG aircraft.

**k.** Issue upon request:

1. Airport taxi routes and traffic patterns.

2. Authorized instrument approach procedures.

3. Time information.

4. Information regarding observed aircraft equipment.

*Phraseology:*

LANDING GEAR APPEARS TO BE DOWN AND IN PLACE.

**l.** Do not approve or disapprove simulated instrument approaches.

## 4-95. CHARTS

Keep charts depicting runways, local taxi routes, airport traffic patterns, and instrument approach procedures convenient to airport advisory position.

## 4-96. AIRPORT NAME

If the airport name is different from the station call and if you believe the pilot is not aware of this fact, state the airport name and words "airport advisory" following the radio call.

## 4-97. SPECIAL VFR CLEARANCE

Provide SVFR services as appropriate in accordance with Chapter 4, Section 9, of this handbook.

## 4-98. RUNWAY VISIBILITY

Where RVR/RVV equipment is operational, irrespective of subsequent operation or nonoperation of navigational or visual aids for the application of RVR/RVV as a takeoff or landing minima, furnish the values for the runway in use in accordance with paragraph 4-99.

**Note. —** Readout capability of different type/model RVR equipment varies. For example, older equipment minimum readout value is 600 feet. Newer equipment may have minimum readout capability as low as 100 feet. Readout value increments also may differ. Older equipment has minimum readout increments of 200 feet. New equipment increments below 800 feet are 100 feet.

**Reference. —** Order 6560.10, Runway Visual Range (RVR). Order 6750.24, ILS Electronic Requirements.

**a.** Issue current touchdown RVR/RVV for the runway/s in use:

1. When prevailing visibility is 1 mile or less regardless of the value indicated.

2. When RVR/RVV indicates a reportable value regardless of the prevailing visibility.

**Note. —** Reportable values are: RVR 6,000 feet or less; RVV 1 ½ miles or less.

**b.** Issue mid/rollout RVR when the value of either is less than 2,000 feet and less than the touchdown value.

## 4-99. RVR/RVV

**a.** Provide RVR/RVV information by stating the runway, the abbreviations RVR/RVV, and the indicated value. When issued along with other weather elements, transmit these values in the normal sequence used for weather reporting.

**Examples. —**

"Runway One Four R-V-R two thousand four hundred."

"Runway Three Two R-V-V three quarters."

**b.** When two or more RVR systems serve the runway in use, report the indicated values for the different systems in terms of touchdown, mid, and rollout as appropriate.

**Examples. —**

"Runway Two Two left R-V-R two thousand, rollout one thousand eight hundred."

"Runway Two Seven Right R-V-R one thousand, mid eight hundred, rollout six hundred."

**c.** When there is a requirement to issue an RVR/RVV value and a visibility condition greater or less than the reportable values of the equipment is indicated, state the condition as MORE than or LESS than the appropriate minimum or maximum readable value.

**Examples. —**

"Runway Three Six R-V-R more than six thousand."

"Runway Niner R-V-R one thousand, rollout less than six hundred."

**d.** When a readout indicates a rapidly varying visibility condition (1,000 feet or more for RVR; one or more reportable values for RVV), report the current value followed by the range of visibility variance.

**Examples. —**

"Runway Two Four R-V-R two thousand, variable one thousand six hundred to three thousand."

"Runway Three One R-V-V three-quarters, variable one-quarter to one."

## 4-100. AIRPORT LIGHTING

Operate airport lighting in accordance with a Letter of Agreement using the following procedures.

## 4-101. EMERGENCY LIGHTING

Whenever you become aware that an emergency has or will occur, take action to provide for the operation of all appropriate airport lighting aids as required.

## 4-102. OBSTRUCTION LIGHTS

If controls are provided, turn the lights on between sunset and sunrise.

## 4-103. ROTATING BEACON

If controls are provided, turn the rotating beacon on:

**a.** Between sunset and sunrise.

**b.** Between sunrise and sunset when the reported ceiling or visibility is below basic VFR minima.

## 4-104. APPROACH LIGHTS

Operate approach lights:

**a.** Between sunset and sunrise when one of the following conditions exists:

1. They serve the landing runway.
2. They serve a runway to which an approach is being made but aircraft will land on another runway.

**b.** Between sunrise and sunset when the ceiling is less than 1000 feet or the prevailing visibility is 5 miles or less and approaches are being made to:

1. A landing runway served by the lights.
2. A runway served by the lights but aircraft are landing on another runway.
3. The airport, but landing will be made on a runway served by the lights.

**c.** As requested by the pilot.

**d.** As you deem necessary, if not contrary to pilot's request.

**Note. —** In the interest of energy conservation, the ALS should be turned off when not needed for aircraft operations.

## 4-105. ALS INTENSITY SETTINGS

When operating ALS as prescribed in paragraph 4-104, operate intensity controls in accordance with the values in the accompanying intensity setting table except:

**a.** When facility directives specify other settings to meet local atmospheric, topographic, and twilight conditions.

**b.** As requested by the pilot.

**c.** As you deem necessary, if not contrary to pilot's request.

Table.—ALS Intensity Setting.

| Step | Visibility—(Applicable to runway served by lights) | |
|---|---|---|
| | Day | Night |
| 5 | Less than 1 mile* | When requested. |
| 4 | 1 to but not including 3 miles | When requested. |
| 3 | 3 to but not including 5 miles | Less than 1 mile.* |
| 2 | 5 to but not including 7 miles | 1 to 3 miles inclusive. |
| 1 | When requested | Greater than 3 miles. |

* and/or 6,000 feet or less of RVR on the runway served by the ALS and RVR.

*Note. — Daylight steps 2 and 3 provide recommended settings applicable to conditions in subparagraphs b and c.

### 4-106. SEQUENCED FLASHING LIGHTS

Operate Sequenced Flashing Lights:

**Note. —** SFL are a component of the ALS and cannot be operated when the ALS is off.

**a.** When the visibility is less than 3 miles and instrument approaches are being made to the runway served by the associated ALS.

**b.** As requested by the pilot.

**c.** As you deem necessary, if not contrary to pilot's request.

### 4-107. RUNWAY EDGE LIGHTS

Operate the runway edge light system/s serving the runway/s in use as follows:

**a.** As contained in a letter of agreement with the airport manager.

**b.** As required by Facility Directives to meet local conditions or requirements.

**c.** Between sunset and sunrise, operate the lights.

1. For departures—When an aircraft calls for airport advisory or request the lights be turned on until the aircraft reports departing the airport area or 15 minutes after the last contact with the aircraft.

2. For arrivals—When an aircraft calls for Airport advisory or when the associated approach control advises that an aircraft is on approach until the aircraft reports/is observed clear of the runway or 15 minutes after last radio contact or arrival time.

**d.** Between sunrise and sunset, turn the lights on as in c. (1) and (2) above when the surface visibility is less than 2 miles.

**e.** Different than a., b., c., or d. above when:

1. You consider it necessary, or

2. Requested by a pilot and no other known aircraft will be adversely affected.

**f.** Do not turn on the runway edge lights when a NOTAM closing the runway is in effect.

**Note. —** Application concerns use for takeoffs/landings/approaches and does not preclude turning lights on for use of unaffected portions of a runway for taxiing aircraft, surface vehicles, maintenance, repair, etc.

**g.** Alaska—The runway lights should remain on from the end of civil twilight to the beginning of civil twilight. If the runway lights are operated part time in this period, broadcast a warning over the airport advisory frequency 2 minutes before turning the lights off.

### 4-108. CHANGING LIGHTED RUNWAY/S

**a.** To switch lights.

1. Advise all known aircraft that the lights are to be changed, specifying runway to be lighted.

2. Turn on the lights for the new runway 30 seconds before turning off the other runway lights, equipment permitting.

**b.** When a pilot requests that other than the favored runway be lighted and two runways cannot be lighted simultaneously, comply with the request if you have no knowledge of the lighted runway being in use.

### 4-109. SIMULTANEOUS APPROACH AND RUNWAY EDGE LIGHT OPERATION

Turn o [illegible] way edge lights for the runway in use wh [illegible] e associated approach lights are on. If mu [illegible] nway light selection is not possible, you may leave the approach lights on and switch the runway lights to another runway to accommodate another aircraft.

**Reference. —** paragraph 4-107

### 4-110. MALSR ODALS

Operate MALSR/ODALS that have separate on-off and intensity setting controls in accordance with the the following **Tables** except:

**a.** When Facility Directives specify other settings to meet local atmospheric, topographic, and twilight conditions.

**b.** As requested by the pilot.

**c.** As you deem necessary, if not contrary to pilot's request.

Table 1.—Two step MALS/One Step RAIL

| Setting | Visibility | |
|---|---|---|
| | Day | Night |
| MALS HI-RAIL ON | Less than 3 miles | Less than 3 miles* |
| MALS LOW | When requested | 3 miles or more |

*Note. — At locations providing part-time flight service, the MALSR shall be set to low intensity during the hours of darkness when the station is unmanned.

Table 2.—Three Step MALS/Three Step RAIL

| Settings | Visibility | |
|---|---|---|
| | Day | Night |
| 3 | Less than 2 miles | Less than 1 mile |
| 2 | 2 to 5 miles inclusive | 1 to, but not including 3 miles* |
| 1 | When requested | 3 miles or more |

Note. — At locations providing part-time flight service, the air-to-ground radio link shall be activated during the hours of darkness when the station in unmanned. If there is no radio air-to-ground control, the MALSR shall be set on intensity step #2 during the hours of darkness when the station is unmanned. (See 7210.3-1253.)

## 4-111. HIRL ASSOCIATED WITH MALSR

Operate HIRL which control the associated MALSR in accordance with the accompanying intensity setting **Table**, except:

**a.** As requested by the pilot.

**b.** As you deem necessary, if not contrary to the pilot's request.

Table.—HIRL associated with MALSR

| Step | Visibility | |
|---|---|---|
| | Day | Night |
| 5 | Less than 1 mile | When requested. |
| 4 | 1 to but not including 2 miles | Less than 1 mile. |
| 3 | 2 to but not including 3 miles | 1 to but not including 3 miles. |
| 2 | When requested | 3 to 5 miles inclusive. |
| 1 | When requested | More than 5 miles. |

*Note. — When going from a given brightness step setting to a lower setting, rotation of the brightness control to a point below the intended step setting and then back to the appropriate step setting will ensure that the MALSR will operate at the appropriate brightness.

## 4-112. . MEDIUM INTENSITY RUNWAY LIGHTS

Operate MIRL or MIRL which control the associated MALSR in accordance with the **Table** except:

**a.** As requested by the pilot.

**b.** As you deem necessary, if not contrary to the pilot's request.

Table.—MIRL Intensity Setting

| Step | Visibility | |
|---|---|---|
| | Day | Night |
| 3 | Less than 2 miles | Less than 1 mile |
| 2 | 2 to 3 miles | 1 to 3 miles |
| 1 | When requested | More than 3 miles |

Reference. — See paragraph 4-111 Note.

## 4-113. HIGH INTENSITY, RUNWAY, RUNWAY CENTERLINE, AND TOUCHDOWN ZONE

Operate high intensity runway and associated runway centerline and touchdown zone lights in accordance with the **Table**, except:

**a.** Where a Facility Directive Specifies other settings to meet local conditions.

**b.** As requested by the pilot.

**c.** As you deem necessary, if not contrary to pilot request.

Table.—HIRL, RCLS, TDZL Intensity Setting

| Step | Visibility | |
|---|---|---|
| | Day | Night |
| 5 | Less than 1 mile* | When requested |
| 4 | 1 to but not including 2 miles | Less than 1 mile |
| 3 | 2 to but not including 3 miles | 1 to but not including 3 miles |
| 2 | When requested | 3 to 5 miles inclusive |
| 1 | When requested | More than 5 miles |

* and/or appropriate RVR/RVV equivalent.

## 4-114. HIRL CHANGES AFFECTING RVR

Keep the appropriate approach controller or PAR controller informed, in advance if possible, of HIRL changes that affect RVR.

## 4-115. HIGH SPEED TURNOFF LIGHTS

Operate high speed turnoff lights:

**a.** Whenever the associated runway lights are used for arriving aircraft. Leave them on until the aircraft has either entered a taxiway or passed the last light.

**b.** As required by Facility Directives to meet local conditions.

**c.** As requested by the pilot.

### 4-116. RUNWAY END IDENTIFIER LIGHTS

When separate on-off controls are provided, operate runway end identifier lights:

**a.** When the associated runway lights are lighted. Turn the REIL off after:

1. An arriving aircraft has landed.

2. A departing aircraft has left the traffic pattern area.

3. It is determined that the lights are of no further use to the pilot.

**b.** As required by Facility Directives to meet local conditions.

**c.** As requested by the pilot.

### 4-117. TAXIWAY LIGHTS

Operate taxiway lights serving the taxiways, or portions thereof, in use as follows:

**a.** Between sunset and sunrise—Before an aircraft taxies onto the taxiway (normally at the time taxi information is issued) and until it taxies off it.

**b.** At other times when you consider it necessary and is required by local instructions.

### 4-118. OPERATION OF LANDING DIRECTION INDICATOR

Align the landing direction indicator with the favored or designated runway.

### 4-119. VISUAL APPROACH SLOPE INDICATORS (VASI)

VASI system with remote on-off switching shall be operated when they serve the runway in use and where intensities are controlled in accordance with the Tables, except:

**a.** As required by Facility Directives to meet local conditions.

**b.** As required by the pilot.

Table 1.—VASI Intensity Setting Two Step System

| Step | Period/Condition |
|---|---|
| High | Day—Sunrise to sunset. |
| Low | Night—Sunrise to sunrise. |

Table 2.—VASI Intensity Setting—Three Step System.

| Step | Period/Condition |
|---|---|
| High | Day—Sunrise to sunset. |
| Medium | Twilight—From sunset to 30 minutes after sunset and from 30 minutes before sunrise to sunrise, and during twilight in Alaska.<br>Note. — During a 1 year period, twilight may vary 26 to 43 minutes between 25 and 49N latitude. |
| Low | Night—From 30 minutes after sunset to 30 minutes before sunrise. |

Note. —The basic FAA standard for VASI systems permits independent operation by means of photoelectric device. This system has no on-off control feature and is intended for continuous operation. Other VASI systems in use include those that are operated remotely from the control tower. These systems may consist of either a photoelectric intensity control with only an on-off switch, a two step intensity system, or a three step intensity system.

Reference. — 7210.3-1254, VASI Systems. Handbook 6850.2, Visual Guidance Lighting Systems.

### 4-120. thru 4-129. RESERVED

## Section 9. SPECIAL VFR CLEARANCE

### 4-130. REQUEST FOR SPECIAL VFR CLEARANCE

**a.** If an aircraft operating under visual flight rules attempts to enter, depart, or operate within a control zone contrary to the provisions of FAR 91.105 (visual flight rules), advise the pilot that weather is below VFR minima and request his/her intentions.

*Phraseology:*

WEATHER IS BELOW V-F-R MINIMA. AN AIR TRAFFIC CONTROL CLEARANCE IS REQUIRED FOR OPERATION IN THE (name) CONTROL ZONE. WHAT ARE YOUR INTENTIONS?

**b.** If the pilot requests special VFR clearance:

1. Transmit a special VFR clearance, if appropriate, where a station/control facility special VFR letter of agreement exists.

2. Request a clearance from the control facility where no special VFR agreement exists.

**Note.** — Helicopter performing hover taxiing operations (normally not above 10 feet) within the boundary of the airport are considered to be taxiing aircraft.

### 4-131. PREDESIGNED SPECIAL VFR CLEARANCES

Transmit predesigned special VFR clearances only during those periods authorized by the control facility.

**Note.** — The control facility may rescind this authorization at any time.

**a.** Apply these procedures only to aircraft equipped with functioning two-way radio. Refer all requests for no-radio special VFR operations to the control facility.

**b.** Transmit clearances so that only one aircraft at a time operates in the control zone unless pilots agree that they will maintain visual separation with other aircraft operating in the control zone.

**c.** Record special VFR clearances and instructions completely and exactly.

**Note.** — Control facilities always retain special VFR operations authority when IFR operations are being conducted in the control zone. They do not clear an aircraft for an approach until the FSS advises that special VFR operations have been suspended.

**d.** Apply the following procedures and phraseologies:

1. Transmit special VFR clearances only for operations within control zones and on the basis of weather conditions officially reported at the airport of intended operations. If weather conditions are not reported at that airport, transmit a special VFR clearance whenever the pilot advises he is unable to maintain VFR and requests special VFR.

*Phraseology:*

"ATC CLEARS (identification) TO ENTER/OUT OF/THROUGH CONTROL ZONE. MAINTAIN SPECIAL VFR CONDITIONS AT OR BELOW (altitude) WHILE IN CONTROL ZONE."

"ATC CLEARS (identification) TO OPERATE WITHIN (name) CONTROL ZONE. MAINTAIN SPECIAL VFR CONDITIONS AT OR BELOW (altitude)."

2. When the ground visibility officially reported at an airport is less than one mile, treat requests for special VFR operations at that airport by other than helicopters as follows:

(a) Inform departing aircraft that ground visibility is less than one mile and that a clearance cannot be issued. Inform arriving aircraft, operating outside of the control zone, that ground visibility is less than one mile and that, unless an emergency exists, a clearance cannot be issued.

(b) Inform arriving aircraft, operating within the control zone, that ground visibility is less than one mile, and ask if the aircraft can depart the control zone with a flight visibility of at least one mile. If the aircraft cannot depart the control zone accordingly, or an emergency exists, relay this information to the control facility immediately.

(c) Transmit a clearance to scheduled air carrier aircraft in the United States to conduct operations if ground visibility is not less than one-half mile.

(d) Transmit a clearance to an aircraft to fly through the control zone if the pilot reports flight visibility is at least one mile.

3. When weather conditions are not officially reported at an airport and the pilot advises the flight visibility is less than one mile, treat request for special VFR operations at that airport by other than helicopters as follows:

(a) Inform departing aircraft that a clearance cannot be issued.

(b) Inform arriving aircraft operating outside the control zone that unless an emergency exists, a clearance cannot be issued.

*Phraseology:*

VISIBILITY (value). A-T-C UNABLE ISSUE DEPARTURE/ENTRY CLEARANCE.

(c) Ask an arriving aircraft operating within a control zone if he can depart the control zone with a flight visibility of at least one mile. If the aircraft cannot depart the control zone accordingly or an emergency exists, relay this information to the control facility immediately.

4. Suspend special VFR operations when necessary to comply with instructions contained in paragraph 4-131b or when requested by the control facility.

*Phraseology:*

SPECIAL VFR AUTHORIZATION DISCONTINUED. RETURN TO AIRPORT OR DEPART CONTROL ZONE. ADVISE INTENTIONS . . . (after response) REPORT LANDING COMPLETED/LEAVING CONTROL ZONE.

5. When an aircraft requests a special VFR clearance to enter the control zone during periods of special VFR activity, instruct the pilot to maintain VFR conditions outside of the control zone pending arrival/recall/departure of the special VFR operations.

*Phraseology:*

A-T-C ADVISES (identification) TO MAINTAIN VFR OUTSIDE OF THE (name) CONTROL ZONE PENDING ARRIVAL/RECALL/DEPARTURE OF SPECIAL VFR AIRCRAFT.

**Note.** — FAR 91.107(e) limits the use of Special VFR by pilots of fixed wing aircraft to daylight hours except where the pilot is instrument rated and currently qualified and his aircraft is equipped for IFR flight. Specialists have to assume that a pilot is qualified and his aircraft is properly equipped to fulfill the specific flight for which air traffic control service has been requested.

## 4-132. thru 4-139. RESERVED

## Section 10. EN ROUTE FLIGHT ADVISORY SERVICE (EFAS)

### 4-140. PROGRAM GOALS AND OBJECTIVES

**a.** The objective of EFAS is to provide en route aircraft with timely and meaningful weather advisories. This objective is met by providing complete, and accurate information on weather as it exists along a route pertinent to a specific flight, provided in sufficient time to prevent unnecessary changes to a flight plan, but when necessary, permit the pilot to make a decision to terminate the flight or alter course before adverse conditions are encountered.

### 4-141. POSITION RESPONSIBILITIES

**a.** Prior to assuming their duties, flight watch specialists shall carefully review the latest available weather information covering the Flight Watch Area (FWA). A discussion of current weather trends with the specialist being relieved and the WSFO is required to obtain and maintain a detailed knowledge of the current and forecast FWA weather. Specialists should watch for and review subsequent forecasts, charts, and observations including radar and pilot reports in order to keep abreast of weather trends and developments.

**b.** Regardless of weather conditions, flight watch specialists shall continually solicit pilot reports regarding upper winds and temperature, wind shear, turbulence and icing. Such reports, if applicable, shall be included in all en route flight advisories. All aircraft contacted, preflight and inflight specialists, and the WSFO shall be notified immediately when pertinent conditions are reported that differ from the current forecast.

**c.** Flight watch specialists shall alert their associated WSFO immediately of the approach or occurrence of significant weather that is not included in the formal forecast.

**d.** Flight watch specialists shall actively solicit PIREP's and make proper dissemination.

**e.** Flight watch specialists are responsible for maintaining a mental picture of inflight condition in their FWA and tailoring all available information for relay to specific flights.

**f.** Periods of heavy activity may require the services of more than one person on the flight watch position, particularly, an additional specialist to process, post, and disseminate weather information. Facility supervisors shall ensure that service to pilots is not derogated by the flight watch specialist being required to divert his attention to these important, but secondary duties. Completion of the En Route Flight Advisory Service training course is not required to perform these secondary functions.

### 4-142. OPERATING PROCEDURES AND PHRASEOLOGY

**a.** The primary purpose of EFAS is to enhance aviation safety by providing en route aircraft with timely and meaningful weather advisories.

**b.** Flight watch (FW) serves as a common collector for receiving and disseminating inflight weather reports. It is not to be used for flight plan filing, position reporting, or to provide a complete preflight weather briefing. En route flight advisories shall be tailored to the phase of flight that begins after climb out and ends with descent to land. Immediate destination weather and terminal forecast shall be provided upon request.

Pilots requesting information not within the scope of flight watch shall be advised of the appropriate FSS to contact.

**c.** Radio and interphone procedures contained in Chapter 3 shall be used in flight watch communications. Exceptions and additions are outlined in this directive and should be used only in providing En Route Flight Advisory Service.

**d.** Facilities shall identify themselves by using the name of the parent FSS and the words "Flight Watch" on all En Route Flight Advisory Service communications outlets, e.g., "KANSAS CITY FLIGHT WATCH."

**e.** Request a pilot to change to another radio frequency for service other than flight watch by informing him of the facility to contact and the frequency to use.

**Examples. —**

"CESSNA 2327D LOS ANGELES FLIGHT WATCH CONTACT SAN DIEGO RADIO ON 122.5 TO FILE YOUR FLIGHT PLAN."

"PIPER 3918D OAKLAND FLIGHT WATCH CONTACT SACRAMENTO RADIO ON 122.3 TO CLOSE YOUR FLIGHT PLAN."

**f.** *Frequency Congestion* All En Route Flight Advisory Service communications outlets transmit and receive on the same (122.0 MHz) frequency; therefore, some frequency congestion may be expected. Since the transmitter at each outlet can be individually keyed, specialists shall key only the one transmitter necessary to contact the desired aircraft. Multiple transmitter keying shall be avoided to the extent possible.

**g.** Solicit pilot reports from a given area by contacting known aircraft in that area, or by broadcasting a request over the remote communications outlet serving the area.

**h.** Suggest route or destination changes to avoid areas of weather which, in the judgment of the specialist, constitute a threat to safe flight of the aircraft.

**i.** Use radar video displays in accordance with paragraph 3-21, Inflight Radar Weather Advisory Service.

**Example.—**

"BEECHCRAFT 2735D THUNDERSTORMS REPORTED ACROSS V15, V15S CLEAR OR THUNDERSTORMS."

"PIPER 9927P FOG HAS NOT DISSIPATED AS EXPECTED AT WASHINGTON NATIONAL AIRPORT. VISIBILITY 1 MILE, DULLES HAS IMPROVED RAPIDLY AND REPORTS 2300 BROKEN, VISIBILITY 7."

## 4-143. PROCESSING AND USE OF WEATHER DATA

Information received from pilots is an invaluable tool in flight planning and in assisting the National Weather Service (NWS). Therefore, it is important that such reports be disseminated to those having a need for them, both within the facility and to external offices. This shall be accomplished in the following manner:

**a.** Pilot reports (PIREP's) shall be given routine dissemination in accordance with Chapter 4, Section 3. Urgent PIREP's shall be called to the associated WSFO in addition to regular dissemination.

**b.** Each flight watch control station shall maintain a graphic display of pertinent PIREP's in its area.

**c.** National Weather Service requests for weather information from pilots inflights, shall be honored as rapidly as operations permit.

## 4-144. NATIONAL FACSIMILE NETWORK

A separate drop on the National Facsimile Network is provided in each flight watch control station to assure that pertinent charts received via this system are readily available at the flight watch position.

**a.** The display should include, but not necessarily be limited to the following: analysis, prognosis, and data charts.

Analysis Surface
Analysis Weather Depiction
Analysis Radar Summary
Analysis 850 mb; 700 mb; 500 mb; 300 mb; 200 mb
LFM Charts
Lifted Index—Precipitable water-freezing Level-Mean Relative Humidity
Prog-12-HR and 24-HR Surface and Precipitation, Low Level Significant Weather
Winds Aloft (all levels)
Prog-30-HR-Surface and 36-HR 1000-500mb thickness
Prog—Tropopause maximum wind/wind shear; high level significant weather

**b.** Preparation of charts shall conform with paragraph 3-3.

## 4-145. INTERRUPTIONS TO SERVICE

Notification of temporary outages shall be made in accordance with the Notices to Airmen (NOTAM) Handbook 7930.2.

## 4-146. EMERGENCIES

**a.** Emergency situations shall be handled in accordance with Chapter 5.

**b.** Although normal procedure is not to request the pilot to change frequencies without good reason, when working an aircraft in emergency over a remote outlet, flight watch specialists should bear in mind that the FSS specialist based at the remote location may be in a better position to assist the pilot. Circumstances and the apparent state of mind of the pilot should be given prime consideration prior to changing frequencies.

## 4-147. thru 4-159. RESERVED

# Chapter 5. EMERGENCY SERVICES

## Section 1. GENERAL

### 5-1. EMERGENCY DETERMINATION

**a.** Because of the infinite variety of possible emergency situations, specific procedures cannot be prescribed. However, when you believe an emergency exists or is imminent, select and pursue a course of action which appears to be most appropriate under the circumstances, and which most nearly conforms to the instructions in this manual.

**b.** An emergency can be either a DISTRESS or URGENCY condition, as defined in the Pilot/Controller Glossary.

**c.** A pilot who encounters a DISTRESS condition should declare an emergency by beginning the initial communication with the word MAYDAY, preferably repeated three times. For an URGENCY condition the word PAN-PAN should be used in the same manner.

**d.** If the words MAYDAY or PAN-PAN are not used and you are in doubt that a situation constitutes an emergency or potential emergency, handle it as though it were an emergency.

**e.** Consider that an aircraft emergency exists and inform the ARTCC, and DF net control if not the same, when:

1. An emergency is declared by either:

(a) The pilot, or

(b) Facility personnel, or

(c) Officials responsible for the operation of the aircraft.

2. Reports indicate that the aircraft's operating efficiency is so impaired that a forced landing may be/is necessary.

3. Reports indicate the crew has abandoned the aircraft or is about to do so.

4. Intercept or escort services are requested.

5. The need for ground rescue appears likely.

6. An Emergency Locator Transmitter (ELT) signal is heard or reported.

**Reference—** Paragraphs 5-2c and 5-17h.

### 5-2. RESPONSIBILITY

**a.** If you are in communication with an aircraft in distress, handle the emergency and coordinate and direct the activities of assisting facilities. Transfer this responsibility to another facility only when you feel better handling of the emergency will result.

**b.** When you receive information about an aircraft in distress, forward detailed data to the Center in whose area the emergency exists.

**Note. —** Notifying the Center about a VFR aircraft emergency allows provision of IFR separation if considered necessary.

**c.** The ARTCC is responsible for consolidation of all pertinent ELT signal information. Forward all heard or reported ELT signals to the Center.

### 5-3. OBTAINING INFORMATION

Obtain enough information to handle the emergency intelligently. Base your decision as to what type of assistance is needed on information and requests received from the pilot, because he is authorized by FAR 91 to determine a course of action.

### 5-4. COORDINATION

**a.** Request necessary assistance from other facilities as soon as possible, particularly if radar or DF service is available.

**b.** Coordinate efforts to the extent possible to assist any aircraft believed overdue, lost, or in emergency status.

### 5-5. PROVIDING ASSISTANCE

**a.** Provide maximum assistance to aircraft in distress. If the aircraft is transponder equipped and not on an IFR flight plan, request the pilot to squawk "MAYDAY" on Code 7700.

*Phraseology:*

"REQUEST YOU SQUAWK MAYDAY ON CODE 7700."

**b.** Enlist the service of available radar facilities and DF facilities operated by the FAA, the military, and the Federal Communications Commission, as well as their emergency services and facilities, when the pilot requests or when you deem necessary.

**Note 1. —** The National SAR Plan assigns search and rescue responsibilities as follows:

a. To the military agencies conducting physical search and rescue opertions.

b. To the FAA

1. Providing emergency service to aircraft in distress.

2. Assuring that SAR procedures will be initiated if an aircraft becomes overdue or unreported. This is accomplished through the ATC system for IFR aircraft and the flight plan program for VFR aircraft.

3. Attempting to locate overdue or unreported aircraft by INREQ and ALNOT communications search.

4. Cooperating in the physical search by making all possible facilities available for use of the searching agencies.

**Note 2. —** Flight service stations serve as the central point for collecting and disseminating information on an overdue or missing aircraft which is not on an IFR flight plan.

**Note 3. —** Centers serve as the central points for collecting information, for coordinating with SAR, and for conducting a communications search by distributing any necessary ALNOTS's concerning:

a. Overdue or missing IFR aircraft.

b. IFR aircraft in an emergency situation occurring in their respective areas.

c. Aircraft on a combined VFR/IFR or an air-filed IFR flight plan and 30 minutes have passed since the pilot requested IFR clearance and neither communications nor radar contact can be established with it. For SAR purposes, these aircraft are treated the same as IFR aircraft.

d. Overdue or missing aircraft which have been authorized to operate in accordance with Special VFR clearance.

**Note 4. —** The ARTCC serves as the contact point for collecting information and coordinating with the Rescue Coordination Center (RCC) on all ELT signals.

## 5-6. RECORDING INFORMATION

Record all actions taken in the provision of emergency assistance.

## 5-7. thru 5-9. RESERVED

## Section 2. OPERATIONS

### 5-10. INFORMATION REQUIREMENTS

**a.** Start assistance as soon as enough information has been obtained upon which to act. Information requirements will vary, depending on the existing situation. Minimum required information for in-flight emergencies is:

**Note. —** In case of an ELT signal see paragraph5-17.

1. Aircraft identification, type and transponder.
2. Nature of the emergency.
3. Pilot's desires.

**b.** After initiating action, obtain the following items or any other pertinent information from the pilot or aircraft operator, as necessary:

1. Aircraft altitude.
2. Fuel remaining in time.
3. Pilot reported weather.
4. Pilot capability for IFR flight.
5. Time and place of last known position.
6. Heading since last known position.
7. Airspeed.
8. Navigation equipment capability.
9. NAVAID signals received.
10. Visible landmarks.
11. Aircraft color.
12. Number of people on board.
13. Point of departure and destination.
14. Emergency equipment on board.

### 5-11. FREQUENCY CHANGES

Although 1215 and 243.0 MHz are emergency frequencies, it might be best to keep the aircraft on the initial contact frequency. Change frequencies only when there is a valid reason.

### 5-12. AIRCRAFT ORIENTATION

Orient an aircraft by the means most appropriate to the circumstance. Recognized methods include:

**a.** Radar.

**b.** DF.

**c.** NAVAIDs.

**d.** Pilotage.

**e.** Sighting by other aircraft.

### 5-13. ALTITUDE CHANGE FOR IMPROVED RECEPTION

When you consider it necessary and if weather and circumstances permit, recommend the aircraft maintain or increase altitude to improve communications, radar, or DF reception.

### 5-14. ALERTING ARTCC

When an aircraft is considered to be in emergency status, alert the ARTCC and forward the following information, as available:

**a.** Facility and person calling.

**b.** Flight plan, including color of aircraft, if known.

**c.** Time of last transmission received, by whom, and frequency used.

**d.** Last position report and how determined.

**e.** Action taken by reporting facility and proposed action.

**f.** Number of persons on board.

**g.** Fuel status.

**h.** Facility working aircraft and frequency.

**i.** Last known position, estimated present position, and maximum range of flight of the aircraft based on remaining fuel and airspeed.

**j.** Position of other aircraft near aircraft's route of flight when requested.

**k.** Whether or not an ELT signal has been heard or reported in the vicinity of the last known position.

**l.** Other pertinent information.

### 5-15. VFR AIRCRAFT IN WEATHER DIFFICULTY

If a VFR aircraft requests assistance when it encounters or is about to encounter IFR weather conditions, request the aircraft to contact the appropriate control facility. Inform that facility of the situation. If the aircraft is unable to communicate with the control facility, relay information and clearances.

### 5-16. AIRCRAFT POSITION PLOTS

Plot the flight path of the aircraft on a chart, including position reports, predicted positions, possible range of flight, and any other pertinent information. Solicit the assistance of other aircraft known to be operating near the aircraft in distress. Forward the information to the ARTCC.

### 5-17. EMERGENCY LOCATOR TRANSMITTER (ELT) SIGNALS

When an ELT signal is heard or reported:

**a.** Notify the ARTCC who will coordinate with the Rescue Coordination Center (RCC).

**b.** If the ELT signal report was received from an airborne aircraft, attempt to obtain the following information:

1. Aircraft altitude.

2. Where and when the signal first heard.

3. Where and when maximum signal heard.

4. Where and when signal faded or was lost. Solicit the assistance of other aircraft known to be operating in the signal area for the same information. Relay all information developed to the ARTCC.

**c.** Attempt to obtain fixes or bearings on the signal and forward any information obtained to the ARTCC.

**Note** — Fix information in relation to a VOR or VORTAC (radial distance) facilitates accurate ELT plotting by RCC and should be provided when possible.

**d.** In addition to the above, when the ELT signal strength indicates the transmitter may be on the airport or vicinity thereof, notify the onsite Airway Facilities personnel for their action.

**e.** Air Traffic personnel shall not leave their required duty stations to locate an ELT signal source.

**f.** Attempt to locate the signal source by checking all adjacent airports that can be reached by government circuits or local telephone not already checked by other ATC facilities for the following information:

1. Can ELT signal be heard.

2. Does signal strength indicate transmitter may be on airport.

3. Can attempt be made to locate and silence transmitter.

4. Advise the results of any action taken. Forward all information developed and action taken to the ARTCC.

**g.** Notify ARTCC if the signal source is located and whether or not it was a bona fide distress; plus any action taken or proposed for silencing the transmitter. Request person who located signals source to attempt to obtain ELT make, model, etc., for relay to RCC via the ARTCC.

**h.** Notify ARTCC if the signal terminates prior to location of the source.

**Note 1.** — The ARTCC serves as the contact point for collecting information and coordinating with the Rescue Coordination Center (RCC) on all ELT signals.

**Note 2.** — Operational ground testing of Emergency Locator Transmitters (ELT) has been authorized during the first 5 minutes of each hour. To avoid confusing the tests with an actual alarm, the testing is restricted to no more than three audio sweeps.

**Note 3.** — Portable hand carried receivers assigned to air traffic facilities (where no Airway Facilities personnel are available) may be loaned to responsible airport personnel or local authorities to assist in locating signal source.

## 5-18. EXPLOSIVE CARGO

When you receive information that an emergency landing will be made with explosive cargo aboard, inform the pilot of the safest or least congested airport areas. Relay the explosive cargo information to:

**a.** The emergency equipment crew.

**b.** The airport management.

**c.** The appropriate military agencies when requested by the pilot.

## 5-19. EXPLOSIVE DETECTION DOG HANDLER TEAMS

Take the following actions should you receive an aircraft request for the location of the nearest explosive detection K-9 team.

**a.** Obtain the aircraft identification and current position and advise the person in charge of the watch of the pilot request.

**b.** The facility will relay the pilot's request to the FAA Washington Communications Control Center, ADL-16, telephone (202) 426-3333 or Autovon 851-1180 providing the aircraft's identification and position.

**c.** ADL-16 will provide the facility with the nearest location. The facility will have ADL-16 standby while the information is relayed to the pilot.

**d.** When you receive the nearest location of the explosive detection K-9 team, relay the information to the pilot.

**e.** If the aircraft wishes to divert to the airport location provided, obtain an estimated arrival time from the pilot and advise the person in charge of the watch. (Ref. **7210.3-208.**)

**f.** After it has been determined that the aircraft wishes to divert to the airport location provided, the AT facility will ascertain estimated arrival time and advise ADL-16. ADL-16 will then notify the appropriate airport authority at the diversion airport. In the event the K-9 team is not available at this airport, ADL-16 will relay this information to the AT facility providing them with the secondary location. ATC will then relay this to pilot concerned for appropriate action.

## 5-20. IN-FLIGHT EQUIPMENT MALFUNCTIONS

When a pilot reports an in-flight equipment malfunction, take the following action:

**a.** Ask him the nature and extent of any special handling desired.

**Note. —** FAR 91 requires aircraft to report to ATC any loss of VOR, TACAN, ADF, or low frequency navigation receiver capability, complete or partial loss of ILS receiver capability, or impairment of air-ground communications capability. This includes the degree to which the capability of the aircraft to operate IFR in the air traffic control system is impaired and the nature and extent of any assistance desired from air traffic control.

**b.** Provide the maximum assistance possible consistent with equipment, workload, and any special handling requested.

**c.** Relay to other specialists or facilities who will subsequently handle the aircraft and any special handling required or being provided.

## 5-21. NAVY FLEET SUPPORT MISSIONS

Handle Navy Fleet Support Missions aircraft as follows:

**a.** When you receive information concerning an emergency to a U.S. Navy "Special Flight Number" aircraft inform the nearest ARTCC of all pertinent information.

**b.** Relay the words "Special Flight Number" followed by the number given as part of the routine IFR flight information.

## 5-22. "DUTCH" AND "ASPEN" AIRCRAFT

If an aircraft (USAF F-12 or SR-71) using the call sign "Dutch" or "Aspen" reports inflight difficulty or declares an emergency, in addition to normal emergency handling of the aircraft, take the following action:

**a.** Forward the report verbatim to the associated ARTCC.

**b.** Comply with all requests from the pilot or the ARTCC.

**c.** Contact the ARTCC area manager if there is any question regarding action to be taken.

**d.** Do not discuss actions taken in regard to these aircraft with other than authorized personnel.

## 5-23. SPECIAL INTEREST FLIGHTS—EMERGENCY OR UNSCHEDULED LANDINGS

**a.** If an aircraft of a communist-controlled country makes an emergency or unscheduled landing in the United States, immediately alert your supervisor, the nearest U.S. Customs Service Office and the appropriate ARTCC. Supply the following information, if available:

1. Type of aircraft.
2. Country of aircraft registry.
3. Destination airport.
4. Nature of emergency or reason for landing, as appropriate.

**Note. —** Communist-controlled countries include Albania, Bulgaria, Peoples Republic of China, Cuba, Czechoslovakia, East Germany, Hungary, North Korea, Outer Mongolia, Poland, Romania, Union of Soviet Socialist Republics and Socialist Republic of Vietnam.

**b.** Advise the pilot that passengers must remain aboard the aircraft after landing until cleared by the U.S. Customs Service Office.

**c.** In cases where communication is established with the aircraft but the aircraft identification cannot be immediately correlated with a known flight plan, notify the appropriate ARTCC and nearest U.S. Customs Service Office at once.

## 5-24. MINIMUM FUEL—USAF/USN/FAA JET AIRCRAFT

If a USAF, FAA, or USN jet aircraft declares a state of "minimum fuel," inform the appropriate control facility of the minimum fuel problem.

**Note. —** Use of the term "minimum fuel" indicates recognition by a pilot that his fuel supply has reached a state where, upon reaching destination, he cannot accept any undue delay. This is not an emergency situation but merely an advisory that indicates an emergency situation is possible should any undue delay occur. Common sense and good judgment will determine the extent of special handling to be given in such situations.

## 5-25. AIRCRAFT BOMB THREATS

**a.** When information is received from any source that a bomb has been placed on, in, or near an aircraft for the purpose of damaging or destroying such aircraft, notify your supervisor or facility chief. If the threat is general in nature, handle it as a "Suspicious Activity." When the threat is targeted against a specific aircraft and you are in contact with the suspect aircraft, take the following actions as appropriate:

**Note 1. —** Facility supervisors are expected to notify the appropriate offices, agencies, operators/air carriers according to applicable plans, directives and Handbook 7210.3 or applicable military directives.

**Note 2. —** "Suspicious Activity" is covered in 7210.3. Military facilities would report a "general" threat through the chain of command or according to service directives.

**Note 3. —** A "specific" threat may be directed at an aircraft registry or tail number, the air carrier flight number, the name of an operator, crew member or passenger, the departure/arrival point or times, or combinations thereof.

1. Advise the pilot of the threat.

2. Inform the pilot that technical assistance can be obtained from an FAA Aviation Explosives Expert.

**Note. —** An FAA Aviation Explosives Expert is on call at all times and may be contacted by calling the FAA Communications Control Center, Washington, DC, Area Code 202 331-2222 or Autovon 851-1180. Technical advice can be relayed to assist civil or military air crews in their search for a bomb and in determining what precautionary action to take if one is found.

3. Ask the pilot if he desires to climb or descend to an altitude that would equalize or reduce the outside air pressure/existing cabin air pressure differential. Obtain and relay an appropriate clearance considering MEA, MOCA, MRA and weather.

**Note. —** Equalizing existing cabin air pressure with outside air pressure is a key step which the pilot may wish to take to minimize the damage potential of a bomb.

4. Handle the aircraft as an emergency and/or provide the most expeditious handling possible with respect to the safety of other aircraft, ground facilities, and personnel.

**Note. —** Emergency handling is discretionary and should be based on the situation. With certain types of threats, plans may call for a low-key action or response.

5. Obtain and relay clearance to a new destination if requested.

6. When a pilot requests technical assistance or if it is apparent that a pilot may need such assistance, do NOT suggest what actions the pilot should take concerning a bomb, but obtain the following information and notify your supervisor who will contact the FAA Aviation Explosives Expert.

**Note. —** This information is needed by the FAA Aviation Explosives Expert so that he can assess the situation and make immediate recommendations to the pilot. The Aviation Explosives Expert may not be familiar with all military aircraft configurations but he can offer technical assistance which would be beneficial to the pilot.

(a) Type, series and model of the aircraft.

(b) Precise location/description of the bomb device if known.

(c) Other details which may be pertinent.

**Note. —** The following details may be of significance if known but it is not intended that the pilot should disturb a suspected bomb/bomb container to ascertain the information: The altitude or time set for the bomb to explode, type of detonating action (barometric, time, antihandling, remote radio transmitter), power source (battery, electrical, mechanical), type of initiator (blasting cap, flash bulb, chemical) and the type of explosive/incendiary charge (dynamite, black powder, chemical).

**b.** When a bomb threat involves an aircraft on the ground and you are in contact with the suspect aircraft, take the following actions in addition to those discussed in the preceding paragraphs which may be appropriate:

1. If the aircraft is at an airport where tower control or FSS advisory service is not available, or if the pilot ignores the threat at any airport, recommend that take-off be delayed until the pilot or aircraft operator establishes that a bomb is not aboard in accordance with FAR, Part 121. If the pilot insists on taking off and in your opinion the operation will not adversely affect other traffic, issue or relay an ATC clearance.

**Reference. —** FAR 121.537.

2. Advise the aircraft to remain as far away from other aircraft and facilities as possible, to clear the runway if appropriate and to taxi to an isolated or designated search area. When it is impractical or if the pilot takes an alternative action (e.g., parking and off loading immediately), advise other aircraft to remain clear of the suspect aircraft by at least 100 yards if able.

**Note. —** Passenger deplaning may be of paramount importance and must be considered before the aircraft is parked or moved away from the service areas. The decision to use ramp facilities rests with the pilot, aircraft operator and/or airport manager.

**c.** If you are unable to inform the suspect aircraft of a bomb threat or if you lose contact with the aircraft, advise your supervisor and relay pertinent details to other sectors or facilities as deemed necessary.

**d.** When a pilot reports the discovery of a bomb or suspected bomb on a aircraft which is airborne or on the ground, determine the pilot's intentions and comply with his requests insofar as possible. Take all the actions discussed in the preceding paragraphs which may be appropriate under the existing circumstances.

**e.** The handling of aircraft when a hijacker has or is suspected of having a bomb requires special considerations. Be responsive to the pilot's requests and notify supervisory personnel. Apply hijacking procedures and offer assistance to the pilot according to the preceding paragraphs if needed.

## 5-26. SECURITY CONTROL OF AIR TRAFFIC AND NAVIGATION AIDS (SCATANA)

**a.** The SCATANA Plan outlines responsibilities, procedures, and instructions for the security control of civil and military air traffic and NAVAIDS under various emergency conditions.

**b.** When notified of SCATANA implementation follow the instructions of FAA Form 7610-1 and any additional instructions received from the ARTCC.

1. To ensure that SCATANA actions can be taken expeditiously, periodic SCATANA tests will be conducted in connection with NORAD exercises. Tests may be local, regional, or national in scope.

2. FSS facilities will participate in tests except where such participation will involve the safety of aircraft.

3. During SCATANA tests all actions will be simulated.

**Reference—** Handbook 7610.4.

## 5-27. thru 5-29. RESERVED

## Section 3. DIRECTION FINDER (DF) SERVICE

### 5-30. ACTIONS REQUIRED

When providing DF services to an aircraft in emergency status:

**a.** Determine if the aircraft is in VFR or IFR weather conditions, fuel remaining, altitude, and heading.

**b.** If the aircraft is operating in IFR weather conditions, inform the pilot of the minimum safe altitude and coordinate with the appropriate control facility.

**c.** Determine if aircraft is on a flight plan. If the aircraft is not on an IFR flight plan and is in VFR weather conditions, advise the pilot to remain VFR.

**d.** Alert DF net whenever the following conditions exist even though the aircraft is radar identified:

1. The pilot is lost.
2. An emergency is declared.

**Note. —** It is not necessary to alert the DF if a terminal controller visually sights aircraft.

### 5-31. DF FIXING BY NET

When a DF net is in operation, determine aircraft position as follows:

**a.** Tell the pilot to transmit for 10 seconds.

**b.** Plot the bearings obtained from two or more stations. Inform the aircraft of its position as of time the bearings were plotted.

**Note. —** The center or DF station designated as net control, is responsible for evaluating and plotting bearings received from individual stations.

### 5-32. DF FIXING BY ONE FACILITY

One DF facility can determine an aircraft's position by:

**a.** Plotting bearings from a reported VOR radial and an observed DF bearing.

**b.** Time method:

1. Determine the aircraft's heading and DF bearing.
2. Tell the aircraft to turn left or right, whichever requires the lesser amount of turn, to a heading perpendicular to the DF bearing.
3. After turn is completed, tell the aircraft to transmit (normally 10 seconds). Observe DF bearing.
4. One minute later, request another transmission. Determine bearing and turn aircraft toward DF site.
5. Divide the difference in bearings (steps 3 and 4) into 60. The result is the number of minutes the aircraft is from the DF site.

**Note. —** One station DF fixing is based on zero winds.

**Example. —** Original bearing of 360 and aircraft heading of 200, the aircraft should be advised to turn right to a heading of 270. Observe bearing, wait 1 minute, and observe bearing. If the first bearing (after completion of turn) was 337 and the second bearing was 325, a difference of 12, the aircraft is 5 minutes from the DF site.

**c.** Distance method:

1. Use the procedures specified in steps (1) through (4) in **b.** above. Request aircraft's true airspeed.
2. Compute the distance by dividing the bearing change (for 1 minute) into the TAS figure.

**Example. —** 140 (TAS) 10 (bearing change for 1 minute)=14 miles from DF site.

### 5-33. VFR DF SERVICE

**a.** Provide DF service to VFR aircraft when either of the following conditions exist:

1. The pilot requests the service.
2. You suggest the service and the pilot concurs.

**b.** After determining an aircraft's bearing, provide DF service by specifying direction of turn and magnetic heading to be flown after completion of turn.

**c.** Issue the following information to the aircraft:

1. Altimeter setting.
2. Pertinent information on known field conditions and latest weather information at the destination airport.

**d.** Request the aircraft's heading and altitude.

*Phraseology:*

WHAT IS YOUR HEADING AND ALTITUDE?

**e.** While receiving the reply, determine the bearing; then inform the aircraft of the following:

1. Direction of turn.
2. Heading, spoken in 3 digits (Do not state the words "degrees").
3. Nature of service.
4. Necessity to remain VFR.
5. Microphone technique.
6. Request for report when airport is in sight.

*Phraseology:*

TURN LEFT/RIGHT HEADING (degrees) FOR DF GUIDANCE TO (name of airport, fix, or location). MAINTAIN VFR AT ALL TIMES. WHEN A REQUEST FOR TRANSMISSION IS RECEIVED PRESS YOUR MICROPHONE BUTTON FOR THE SPECIFIED NUMBER OF SECONDS. And if appropriate, REPORT (name) AIRPORT IN SIGHT.

**f.** Request the aircraft to transmit for specified periods, as required. The frequency of these requests will vary depending on such factors as wind, frequency congestion, and distance, but should be made at least once each minute until aircraft reports airport in sight or service is terminated.

*Phraseology:*

TRANSMIT (number-normally 10) SECONDS. TURN LEFT/RIGHT, HEADING (degrees) or CONTINUE HEADING (degrees).

**g.** Inform aircraft when DF service is terminated.

**Note.** — Service may be terminated when airport is in sight, the desired fix or location is reached, practice steers or approaches are discontinued etc.

*Phraseology:*

DF SERVICE TERMINATED

### 5-34. EMERGENCY DF APPROACH PROCEDURE

**a.** Under emergency conditions where a standard instrument approach cannot be executed, provide DF guidance and instrument approach service as follows:

1. Obtain and relay ATC clearance including radio failure procedures.

2. Issue destination airport weather.

3. Provide guidance as specified in paragraph443e, except delete the VFR requirement. To avoid large turns over the DF site, aircraft should be guided to pass over the DF site established on the course that it will maintain on the outbound leg of the approach.

*Phraseology:*

TURN LEFT/RIGHT, HEADING (degrees) FOR DF GUIDANCE AND APPROACH TO THE (name) AIRPORT. MAINTAIN (altitude specified by ATC). WHEN A REQUEST FOR TRANSMISSION IS RECEIVED, PRESS YOUR MICROPHONE BUTTON FOR THE SPECIFIED NUMBER OF SECONDS. REPORT AIRPORT IN SIGHT. IF NO TRANSMISSION ARE RECEIVED FOR (time of interval) PROCEED VFR. IF UNABLE, PROCEED (routing, fix, altitude as specified by ATC). CONTACT (facility) ON (frequency).

**b.** Inform the pilot when he is over the DF site, advise him to perform landing check, and provide guidance for outbound track.

*Phraseology:*

OVER DF SITE, PERFORM LANDING CHECK, CONTINUE HEADING (degrees) or TURN LEFT/RIGHT, HEADING (degrees).

**c.** Provide DF approach guidance in accordance with the triangle or teardrop approach procedures as specified on FAA Form 8260-6.

1. Triangle Approach Pattern.

(a) Time the outbound leg and issue descent information. Normally, the outbound track should be maintained for 3 minutes but this may be adjusted, depending on airspeed and nature of the emergency. Time intervals between bearing observations should not exceed 15 seconds.

*Phraseology:*

ON OUTBOUND LEG. DESCEND AND MAINTAIN (altitude specified on FAA Form 8260-6 for outbound course).

(b) When outbound leg is completed, issue turn instructions so that the aircraft's course is perpendicular to the final approach course. Issue further descent information, if so specified on FAA Form 8260-6. Issue missed approach procedures as specified on FAA Form 8260-6.

*Phraseology:*

ON BASE LEG. IN CASE OF MISSED APPROACH CLIMB TO (altitude) ON COURSE (degrees) WITHIN (number) MILES.

(c) At least two turns should be made onto final approach.

(d) When aircraft is on final approach, advise it to start descent and provide minimum descent altitude and field elevation information. Take bearings more frequently. Time intervals between bearing observations should not exceed 5 seconds during the estimated last 30 seconds of the approach.

*Phraseology:*

ON FINAL APPROACH, BEGIN DESCENT, MINIMUM DESCENT ALTITUDE (number of feet). FIELD ELEVATION (number of feet).

(e) If the aircraft misses approach inform the appropriate control facility.

2. Teardrop Approach Pattern.

(a) Provide guidance to establish the aircraft on the outbound course. Issue descent information, if appropriate. Time intervals between bearing observations should not exceed 15 seconds.

(b) Issue direction of turn and inbound heading information. Issue missed approach procedures as specified on FAA Form 8260-6.

(c) When procedure turn is complete, provide directional guidance and issue descent information. Time intervals between bearing observations should not exceed 5 seconds during the estimated last 30 seconds of the approach.

(d) If aircraft misses approach inform the appropriate control facility.

## 5-35. thru 5-39. RESERVED

## Section 4. VOR/ADF ORIENTATION

### 5-40. ACTIONS REQUIRED

When providing VOR/ADF orientation services to an aircraft in emergency status:

**a.** Determine if aircraft is in VFR or IFR weather conditions, fuel remaining, altitude, and heading.

**b.** If the aircraft is operating in IFR weather conditions, inform the pilot of the minimum safe altitude and coordinate with the appropriate control facility.

**c.** Determine if aircraft is on a flight plan, if the aircraft is not on an IFR flight plan and is in VFR weather conditions, advise the pilot to remain VFR.

**d.** Alert DF net whenever the following conditions exist even though the aircraft is radar identified:

1. The pilot is lost.
2. An emergency is declared.

**5-40. Note 1—** It is not necessary to alert the DF net if a terminal controller visually sights the aircraft.

### 5-41. ADF ORIENTATION/ADF CROSSFIX

When using ADF orientation and/or crossfix procedures, determine aircraft position as follows:

**a.** POSITION FIXING

**1.** Advise aircraft to remain VFR, maintain straight and level flight, and to align directional gyro with magnetic compass. Provide local altimeter setting. Determine weather conditions aircraft is encountering and available fuel.

*Phraseology:*

"MAINTAIN VFR AT ALL TIMES. ADVISE IF ALTITUDE OR HEADING CHANGE IS NECESSARY TO REMAIN VFR. ____________ ALTIMETER ____________ MAINTAIN STRAIGHT AND LEVEL FLIGHT. RESET YOUR HEADING INDICATOR TO AGREE WITH YOUR MAGNETIC COMPASS. AFTER YOU HAVE DONE THIS SAY YOUR HEADING AND ALTITUDE."

**2.** Advise aircraft to maintain the same heading, verify aircraft has ADF equipment, and determine airspeed.

*Phraseology:*

"CONTINUE HEADING ____________ WHAT TYPE OF NAVIGATIONAL EQUIPMENT DO YOU HAVE ON BOARD AND WHAT IS YOUR AIRSPEED?"

**3.** Determine weather and fuel conditions.

*Phraseology:*

"WHAT IS THE WEATHER AT YOUR ALTITUDE AND FUEL REMAINING IN TIME?"

**4.** Advise aircraft to tune ADF receiver to the NDB. Provide the NAVAID name, identifier, and frequency.

*Phraseology:*

"TUNE YOUR ADF RECEIVER TO THE (name) NDB, (frequency), (identification). ADVISE WHEN YOU HAVE DONE THIS."

**5.** After acknowledgment has been received, advise aircraft to set ADF function switch to ADF position and report the reading.

*Phraseology:*

"TURN THE FUNCTION SWITCH TO THE ADF POSITION, WHEN THE NEEDLE STABILIZES ADVISE THE ADF NEEDLE READING."

**6.** Compute the magnetic bearing.

**5-41a1. Note.—** RB + MH = MB

**7.** Advise aircraft of its direction from the NAVAID.

*Phraseology:*

"YOU ARE (direction) OF THE (name) RADIO BEACON."

**b.** ORIENTATION

**1.** Turn aircraft inbound to the NDB being used. Provide direction of turn and heading to be flown. Advise pilot to report when established on that heading.

*Phraseology:*

"FOR ADF ORIENTATION TURN (left/right) HEADING ____________ REPORT ESTABLISHED HEADING ____________"

**2.** Notify ARTCC. Provide all required information including aircraft position and heading.

**3.** Verify that aircraft is established on a line of position to the NDB.

*Phraseology:*

"WHAT IS YOUR ADF NEEDLE READING?"

**4.** Provide heading adjustments as needed for aircraft to continue inbound to the NDB.

**(a)** If aircraft report indicates an ADF reading other than "0", compute new heading and advise aircraft.

*Phraseology:*

"TURN (direction) HEADING ____________ REPORT ESTABLISHED HEADING ____________"

**(b)** After pilot reports established and needle is on "0", heading adjustments are not necessary.

*Phraseology:*

"CONTINUE HEADING ___________"

c. CROSSFIXING

After the aircraft is established inbound to the NAVAID use the following procedures:

**1.** Advise aircraft to tune ADF receiver to the NDB to be used for crossfixing. Provide the NAVAID name, identifier, and frequency.

*Phraseology:*

"TUNE YOUR ADF RECEIVER TO THE (name) RADIO BEACON, (frequency) (identification). ADVISE WHEN YOU HAVE DONE THIS."

**2.** After acknowledgment has been received, request ADF reading.

*Phraseology:*

"TURN THE FUNCTION SWITCH TO THE ADF POSITION, WHEN THE NEEDLE STABILIZES, ADVISE THE ADF NEEDLE READING."

**3.** Compute and plot the second line of position.

**5-41c3. Note.—** The intersection of the two lines of position is the aircraft position at the time of the second ADF reading.

**4.** Advise the aircraft of its position.

*Phraseology:*

"YOUR POSITION IS (distance) (direction) OF THE (name) RADIO BEACON."

**5.** Request pilot's intentions.

*Phraseology:*

"WHAT ARE YOUR INTENTIONS?"

## 5-42. VOR ORIENTATION

When using VOR orientation and/or crossfix procedures, determine aircraft position as follows:

a. POSITION FIXING

**1.** Advise aircraft to remain VFR, maintain straight and level flight, and to align directional gyro with magnetic compass. Provide local altimeter setting.

*Phraseology:*

"MAINTAIN VFR AT ALL TIMES. ADVISE IF ALTITUDE OR HEADING CHANGE IS NECESSARY TO REMAIN VFR, ___________ ALTIMETER ___________ MAINTAIN STRAIGHT AND LEVEL FLIGHT. RESET YOUR HEADING INDICATOR TO AGREE WITH YOUR MAGNETIC COMPASS. AFTER YOU HAVE DONE THIS SAY YOUR HEADING AND ALTITUDE."

**2.** Advise aircraft to maintain the same heading, verify aircraft has VOR equipment, and determine airspeed.

*Phraseology:*

"CONTINUE HEADING ___________ WHAT TYPE OF NAVIGATIONAL EQUIPMENT DO YOU HAVE ON BOARD AND WHAT IS YOUR TRUE AIRSPEED?"

**3.** Determine weather conditions and fuel status.

*Phraseology:*

"WHAT IS THE WEATHER AT YOUR ALTITUDE AND FUEL REMAINING IN TIME?"

**4.** Advise aircraft to tune receiver to the VOR you have selected. Provide VOR name, frequency, and lost communication procedures.

*Phraseology:*

"REMAIN TRANSMITTING THIS FREQUENCY. TUNE YOUR RECEIVER TO THE (name) VOR (frequency), CHECK VOLUME UP. IF COMMUNICATION IS NOT ESTABLISHED IMMEDIATELY, RETURN TO THIS FREQUENCY."

**5.** Using only the voice feature of the VOR, establish positive communication with the aircraft.

*Phraseology:*

"___________ RADIO TRANSMITTING ON THE___________ VOR, HOW DO YOU HEAR? OVER."

**6.** Determine aircraft course selector reading.

*Phraseology:*

"ROTATE YOUR COURSE SELECTOR SLOWLY UNTIL THE LEFT/RIGHT NEEDLE CENTERS WITH A "TO" INDICATIONS; THEN ADVISE YOUR COURSE SELECTOR READING."

**7.** Advise the aircraft of its position.

*Phraseology:*

"YOUR POSITION IS (direction) OF THE (name) VOR."

b. ORIENTATION

**1.** Turn aircraft inbound to the VOR being used. Provide direction of turn and heading to be flown. Advise pilot to report when established on that heading.

*Phraseology:*

"FOR VOR ORIENTATION TURN (left/right) HEADING ___________, REPORT ESTABLISHED HEADING ___________"

**2.** Notify ARTCC. Provide all required information including aircraft position and heading.

**3.** Verify that aircraft is established on a line of position to the VOR.

*Phraseology:*

"WHAT IS THE POSITION OF YOUR LEFT/RIGHT NEEDLE?"

**4.** Provide heading adjustments as needed for aircraft to continue inbound to the VOR.

**(a)** When aircraft reports indicates the left/right needle is not centered, advise aircraft to recenter needle with a "TO" indication and report the course selector reading.

*Phraseology:*

"WHAT IS THE POSITION OF YOUR LEFT/RIGHT NEEDLE?" (aircraft response indicates not centered.) "AGAIN, ROTATE YOUR COURSE SELECTOR SLOWLY UNTIL THE LEFT/RIGHT NEEDLE CENTERS WITH A "TO" INDICATION AND ADVISE YOUR COURSE SELECTOR READING. TURN (direction) HEADING ____________, REPORT ESTABLISHED HEADING ____________"

**(b)** After aircraft is established on inbound radial, advise aircraft to continue on inbound heading.

*Phraseology:*

"CONTINUE HEADING ____________"

**5.** Plot line of position.

**c.** CROSSFIXING

After the aircraft is established inbound to the VOR use the following procedures:

**1.** Advise aircraft to tune receiver to the VOR you have selected for crossfixing. Provide VOR name, frequency, and lost communications procedures.

*Phraseology:*

"REMAIN TRANSMITTING THIS FREQUENCY. TUNE YOUR RECEIVER TO THE (name) VOR (frequency), CHECK VOLUME UP. IF COMMUNICATION IS NOT ESTABLISHED IMMEDIATELY, RETURN TO THIS FREQUENCY."

**2.** Using only the voice feature of the (second) VOR, establish positive communication with the aircraft.

*Phraseology:*

"____________ RADIO TRANSMITTING ON THE ____________ VOR, HOW DO YOU HEAR? OVER."

**5-42c2. Note.—** Transmit only on the frequency of the VOR being used for crossfixing.

**3.** After communication has been reestablished, advise the aircraft to recenter the VOR left/right needle and advise the reading.

*Phraseology:*

"ROTATE YOUR COURSE SELECTOR SLOWLY UNTIL THE LEFT/RIGHT NEEDLE CENTERS AND THEN ADVISE YOUR COURSE SELECTOR READING."

**4.** Advise aircraft to continue inbound heading.

*Phraseology:*

"CONTINUE HEADING ____________"

**5.** Plot new line of position from (second) VOR, advise aircraft of its position.

*Phraseology:*

"YOUR POSITION IS (miles) (direction) OF THE ____________ VOR."

**5-42c5. Note.—** The intersection of the two lines of position is the aircraft position at the time of the second VOR reading.

**6.** Request aircraft intentions.

*Phraseology:*

"WHAT ARE YOUR INTENTIONS?"

## 5-43. GUIDANCE TO AIRPORT

If after establishing aircraft position and pilot requests guidance to airport:

**a.** Plot course to the airport.

**b.** Provide course guidance information to aircraft.

**1.** Advise aircraft of direction of turn and heading to the airport.

*Phraseology:*

"FOR A HEADING TO THE (name) AIRPORT, TURN (direction) HEADING ____________ REPORT ESTABLISHED HEADING ____________"

**2.** After aircraft reports established on heading to airport, advise aircraft of its position in relation to the airport.

*Phraseology:*

"YOU ARE (miles) (direction) FROM THE (name) AIRPORT. CONTINUE HEADING ____________"

**3.** Continue to provide assistance in the form of pilotage and airport information as necessary.

*Phraseology:*

"DO YOU SEE ANY PROMINENT LANDMARKS?"

"ARE YOU FAMILIAR WITH THE (name) AIRPORT?"

"(Name) AIRPORT FIELD ELEVATION ____________ IT HAS (number and surface type) RUNWAYS. THE RUNWAY(S) RUN (direction). THE AIRPORT IS LOCATED (direction/distance) FROM (landmark visible to aircraft) UNICOM (and/or tower) FREQUENCY ____________"

**4.** Advise aircraft to report landing airport in sight.

*Phraseology:*

"REPORT AIRPORT IN SIGHT."

**5.** Determine when aircraft no longer needs assistance.

*Phraseology:*

"DO YOU REQUIRE FURTHER ASSISTANCE?"

**6.** When aircraft indicates assistance is no longer required, terminate service. Provide tower or unicom frequency and local altimeter setting.

*Phraseology:*

"(VOR/ADF) ORIENTATION SERVICE TERMINATED. (Frequency) (Altimeter)"

**7.** Notify ARTCC of aircraft position, termination of services and pilot's intentions.

# Chapter 6. FLIGHT DATA

## Section 1. GENERAL

### 6-1. FLIGHT PLANS

Recommend the filing of flight plans, particularly when lake, island, mountain, or ocean reporting service is available. Brief pilots, as appropriate, on the following:

**a.** Identify the tie-in FSS for the departure point and advise the pilot to report departure time directly to that facility. When a departure report is unlikely because of inadequate communications capability, advise the pilot that the flight plan will be activated at the proposed time unless an amended time or cancellation is received prior to ETD.

**b.** If the destination airport is not served by a station, determine with whom the pilot will cancel.

**c.** Recommend that a separate flight plan be filed for each leg of a VFR flight when the duration of a stopover is expected to exceed 1 (one) hour.

**d.** Request the pilot to inform an FSS when a 30-minute change in the filed time en route occurs.

**e.** On return flights from remote areas, e.g., a fishing site, establish a mutually acceptable date/time with the pilot for alerting search and rescue.

**f.** On a combined IFR/VFR flight, confirm with the pilot whether the latter portion is by flight plan or not.

**g.** On a combined VFR/IFR confirm whether the first portion is by flight plan, if so, with whom the pilot will cancel.

**h.** If a pilot indicates the flight will penetrate positive control airspace, advise the pilot of the PCA requirements. (Reference: paragraph4-22).

**i.** When a pilot files to an airport served by a part-time FSS and the ETA is during the period the facility is closed, ask the pilot to close with the associated FSS, identified in the Location Identifier Handbook and Airport/Facility Directory. (Reference: paragraph6-28a)

**j.** Upon request, inform pilots filing IFR flight plans of the appropriate and most effective means of obtaining IFR departure clearances from non-tower, non-FSS, and outlying airports.

### 6-2. FLIGHT PLAN DATA

Handle flight plan data as follows:

**a.** Record flight plans on FAA Form 7233-1.

**Note.** — FAA Form 7233-3 should also be used until stock is depleted.

**b.** Record on Form 7233-1 or a flight progress strip the flight plan data received from an operations office. The operations office must obtain complete information on the flight, but need forward to the FAA only those items necessary for control purposes or flight assistance service.

**c.** Pass the Form 7233-1 to the appropriate operating position for delivery of the flight notification message. (Provide a means of displaying the form while data is being transmitted).

### 6-3. FAA FORM 7233-1

Record flight plans on FAA Form 7233-1. Completion of all blocks is not required in every case, and all items filed are not always transmitted. Use authorized abbreviations where possible. Fill in the form as follows:

**a.** *Item 1. Type of Flight Plan:*

Check the appropriate box

**b.** *Item 2. Aircraft Identification*: Enter as follows:

1. *Civil Aircraft*—Use letter-number registration number. Prefix the letter "T" for air taxis, letter "L" for lifeguard or 2- or 3- letter aircraft company designator specified in the Contractions handbook, followed by trip or flight number.

**Examples.** —

"N12345"

"LN751B"

"TN5552Q"

"AA192"

2. *U.S. Military Aircraft*—Use the military abbreviation followed by the last 5 digits of the aircraft number For certain tactical mission aircraft enter the assigned 3 to 6 letter code word, followed by a 1 to 4 digit number.

| Abbreviation | Military Service |
|---|---|
| A | USAF |
| C | Coast Guard |
| E | Air Evacuation |
| G | Air/Army National Guard |
| L | LOGAIR (USAF contact) |
| VM | Marine Corps |
| R | Army |
| S | Special Air Mission |
| M | MAC (Military Airlift Command) |
| VV | Navy |

3. *Canadian Military Aircraft*—The abbreviations below shall be followed by a number group not to exceed four digits.

| Abbreviation | Military Service |
|---|---|
| CAM | Transport Command |
| CTG | Canadian Coast Guard |
| CAF | Canadian Armed Force |

**c.** *Item 3. Aircraft Type/Special Equipment*—Insert the name or abbreviation, as listed in the Contractions handbook, of the manufacturer's or military designation. If a formation flight is planned, enter the number and type of aircraft: e.g., "8/B47."

1. *Prefix to Aircraft Type*—Indicate, for both VFR and IFR operations, the aircraft's weight class if it is a heavy, by adding the prefix H to the aircraft type: e.g., H/DC10.

2. *Suffix to Aircraft Type*—Indicate, for both VFR and IFR operations, the aircraft's radar transponder, DME, or RNAV capability, by adding the appropriate symbol, preceded by a slant as follows:

| | |
|---|---|
| /X | No transponder. |
| /T | Transponder with no altitude encoding capability. |
| /U | Transponder with altitude encoding capability. |
| /D | DME, no transponder. |
| /B | DME, transponder with no altitude encoding capability. |
| /A | DME, transponder with altitude encoding capability. |
| /M | TACAN-only, no transponder. |
| /N | TACAN-only, transponder with no altitude encoding capability. |
| /P | TACAN-only, transponder with altitude encoding capability. |
| /C | RNAV, transponder with no altitude encoding capability. |
| /R | RNAV, transponder with altitude encoding capability. |
| /W | RNAV and no transponder. |

**d.** *Item 4. Estimated True Airspeed (TAS Knots):* Enter two to four digits.

**e.** *Item 5. Point of departure:* Enter name or identifier of the departure airport or point over which the flight plan is activated.

**f.** *Item 6. Departure Time:*—Self-explanatory.

**g.** *Item 7. Initial Cruising Altitude:* Proposed altitude or flight level; e.g., "175" or "180."

**h.** *Item 8. Route of Flight:* Enter abbreviated names of airways or jet routes to clearly indicate the proposed flight path. For direct flight use names or identifiers of navigation aids and geographical points or coordinates. If more than one airway or jet route is to be flown, clearly indicate the transition points.

**i.** *Item 9. Destination:* Enter name or abbreviation of airport or position where the flight will terminate.

**j.** *Item 10. Estimated Time En Route:* Enter in hours and minutes the total elapsed time between departure and destination; e.g., 0430.

**k.** *Item 11. Remarks:* Information necessary for ATC purposes or to assist search operations, plus any other data appropriate to the flight, e.g., the abbreviations "FAA" or "DOT."

**Note.**— Civil aircraft with authorized company identifications are required to file the full authorized radio call in remarks.

**l.** *Item 12. Fuel on Board:* Enter in hours and minutes.

**m.** *Item 13. Alternate Airport:* Enter the name or abbreviation if specified by the pilot.

**n.** *Item 14. Pilot's Name, Address, Telephone Number and Aircraft's Home Base:* Self-Explanatory.

**o.** *Item 15. Number of Persons Aboard:* Self-Explanatory.

**p.** *Item 16. Color of Aircraft:*

| | | | |
|---|---|---|---|
| A | Amber | O | Orange |
| BE | Beige | P | Purple |
| B | Blue | R | Red |

| | |
|---|---|
| BK | Black |
| BR | Brown |
| G | Green |
| GD | Gold |
| GY | Gray |
| M | Maroon |
| S | Silver |
| T | Tan |
| TQ | Turquoise |
| V | Violet |
| W | White |
| Y | Yellow |

**Note 1.—** For ICAO flight plans see **Appendix D**

**Note 2.—** Local procedures may be developed for use of the back side of Form 7233-1.

## 6-4. FLIGHT STRIP PRINTERS

Departure stations, when transmitting flight notification messages to FSS's having flight strip printers, (see M59 Chart, Handbook 7110.80) shall precede the 3-character addressee indicator with the letter "F" (e.g., FLAX).

## 6-5. ALASKA SPECIAL INSTRUCTIONS

Stations in Alaska shall insert ICAO headings and endings and number all message traffic. In addition to the addressees specified in this chapter, include BASE OPS as an addressee on all messages concerning aircraft destined to a military base.

**a.** FAA tie-in facilities perform all flight following functions. When BASE OPS have send capability on Service B, they will transmit their ATS messages directly to the circuit. Tie-in FSS's shall assume all responsibilities for flights assigned to departure or destination stations, as appropriate.

**b.** The military base will address all flight plan messages and departures to all addresses specified in this part plus their local tie-in facility.

**c.** Acknowledgments for flight plans and associated movement messages originated by and transmitted by base operations shall be addressed to the originating base operating office and associated tie-in FSS.

**d.** When base operation offices have a teletypewriter drop and are included in the address, the associated tie-in FSS is not required to notify them of inbound flights.

**e.** Any flight plan, departure (including intermediate departure) or arrival, on an FAA aircraft will be given normal distribution plus PANCYA and PANCYAFI whether VFR or IFR. Use military flight handling procedures in Section 4 for these messages. It is the pilot's responsibility to advise the FSS of arrival/departure times.

## 6-6. thru 6-9. RESERVED

## Section 2. IFR FLIGHT PLAN HANDLING

### 6-10. DOMESTIC IFR FLIGHT PLANS

IFR flight plans should consist of items 1 through 16 of FAA Form 7233-1. Items 1 through 11 shall be transmitted to the ARTCC as part of the IFR flight plan proposal. Items 12 through 16 shall be retained in the FSS and be available upon request.

### 6-11. NOTIFYING ARTCC

Transmit flight plans and flight plan amendments to the ARTCC within whose control area IFR flight is proposed to begin. Use Handbook 7350.4 or appropriate aeronautical charts to determine the ARTCC to which each transmission shall be made. Use the appropriate 3-character computer address. Transmit flight plans and flight plan amendments via interphone to the error referral position or departure sector when the aircraft's proposed departure time is less than 15 minutes from transmittal time. Advise the ARTCC's departure sector or error referral position, via interphone, when a message is received indicating ineligibility or a response is not received via teletypewriter within 10 minutes. Transmit flight plans as follows:

**a.** When two or more flight plans are received from the same aircraft, or for flight plans which propose alternating. VFR and IFR, stopover, or terminal area delay, the tie-in station for the initial departure point shall transmit separate messages to appropriate ARTCC's for each IFR portion or segment.

**Note. —** BASEOPS with access to Utility B will transmit messages for the first segment and for any subsequent segments departing from within their ARTCC area.

**b.** Flight plans specifying special use airspace delays (MOA, Warning Areas, Restricted Areas, ATC Assigned Airspace) should be transmitted as in **a.** above except when letters of agreement specify otherwise.

**c.** Aerial refueling delays, or any other en route delays not covered in **a.** or **b.** above and not involving a change of altitude stratum, do not require separate messages. Delay information shall be filed within the route of flight. If a change of altitude stratum is indicated, transmit separate messages as in **a.** or **b.**

**d.** When a composite, stopover or terminal area delay flight plan is revised:

1. Before departure, transmit the information to the original addressees plus any new addressees.

2. After departure, transmit the information to all new addressees who are affected by the change.

**e.** When a flight is to depart after 0500 hours local time on the day following the filing of the flight plan, do not transmit the flight plan to the center until after 0000 hours local time.

**f.** Address all IFR flight plan messages to the ARTCC serving the point of departure and all concerned oceanic and nonconterminous ATS units, except FAA ATCTs.

**g.** For flights inbound to the conterminous U.S. from Alaska or Hawaii, address only the first conterminous U.S. ARTCC (e.g., for a proposed flight from Sitka to Houston address PAZAZQ, CZVRZQ, KZSEZQ).

**Note 1.—** In the event of a time zone difference between the station and the associated center, use the center's local time in determining transmission time.

**Note 2.—** The ARTCC within whose control area IFR flight is proposed to begin will forward proposed tower en route flight plan data to the appropriate departure terminal facility. (Reference 7110.65, paragraph2-31).

### 6-12. IFR FLIGHT PLAN CONTROL MESSAGES

*(Pacific — See Pacific Supplement)*

Transmit all proposed IFR flight plan messages to the ARTCC within whose control area IFR flight is proposed to begin.

**a.** Communications functions:

1. Each center shall maintain a list of stations adapted for full response capability. All stations which normally input flight plans to the center should be on the listing.

2. Flight plan data messages shall be addressed to the computer only. All other types of messages for ARTCC attention shall be addressed to the teletypewriter position only. No message shall be addressed to both.

Acknowledgments for all numbered messages will be received from the computer or the Center TTY position indicating receipt by the ARTCC but not necessarily computer acceptance.

3. The ARTCC teletypewriter position shall acknowledge for all flight data messages when the computer is non-operational and shall assist the Primary A position in recovery of non-accepted flight plan data messages.

4. The teletypewriter position shall monitor computer inputs and responses during periods of circuit failure outlined in 7110.80 paragraphs 2-12 and 2-13. An acknowledgment will be transmitted

to any station, utilizing the alternate routing chart (7110.80 paragraph2-14) which cannot receive the computer response due to circuit or BDIS relay failure. Recovery of any rejected flight plans for these stations will be accomplished within the center.

5. When more than one teletypewriter address is used in the message, only one may be a computer address and it shall be the last address. This restriction does not apply to ICAO formatted flight plans.

6. When the ATC Command Center (ATCCC) has advised that FAD (Fuel Advisory Departure) procedures are in effect and the departure ARTCC is on your area circuit. The TTY position must also be addressed. The computer address shall be separated from the TTY address by a space. Do not use the condition code (< < ∨). When the departure ARTCC is not on your area circuit, normal addressing sequence, coding and restrictions apply.

**Example.** — Message from ATL FSS on circuit 9262 for departure from ZCT (also on circuit 9262) center area:

< < ∨ ZTL < < ≡

ATL FF DCC ZCT < < ≡

(text)< < 6≡ NNNN

**b.** Format

1. Adhere to a fixed order of data. Do not exceed the stated maximum number of characters or elements allowed for each field in messages addressed to an ARTCC computer. Flight plans filed containing more than the stated character maximums should be sent using the ARTCC teletypewriter address.

2. One teletypewriter space character must be entered at the end of each data field. The following clarifications are presented:

(a) The first data field of a message need not be preceded by a space.

(b) The last data field of a message need not be followed by a space.

3. Each field of data is composed of one or more elements. Discrete elements of information within a field are separated by delimiters, generally slashes (oblique stroke) or periods.

4. Input errors may be corrected in one of the following manners:

(a) Messages addressed using ARTCC computer address:

(1) The single letter X used as a field causes deletion of the previous field (except remarks). Successive X letter fields may be used for multiple deletions. Thus (space) X (space) X (space) causes the deletion of the two preceding fields.

(2) Within the route of flight (field 10), the single letter X, used as an element, causes deletion of the preceding element. Successive X-letter elements are used for multiple deletions. Thus, .X.X. causes deletion of the two preceding elements.

(3) The inclusion of CXX (preceded and followed by a space) in an input message will delete the entire message. The position of the CXX within the input message has no significance, except that CXX will not be recognized within remarks (field 11).

(4) A typing error may be corrected in computer input flight plans by backspacing to the preceding space character and lettering out the error, except that lettering out of the error shall not exceed 4 letter impulses. If a typing error is made in any character through field 00, discard the tape and retype the flight plan.

(b) Messages addressed using ARTCC teletypewriter address:

(1) These messages are handled by facility personnel; for this reason do not use the techniques described in (a) (1) (2) and (3) above. The prime consideration shall be readability of the transmitted data.

5. All domestic flight data processing computers have the capability to return acknowledgments to the source and, depending on local adaption, return error messages and accept amendments. Adaption is provided on a local basis, generally being based on the level of activity with the inputting station. Notify the appropriate ARTCC Data Systems Specialist or Primary A position when it is suspected that a flight plan has been erroneously rejected by the computer.

6. IFR flight plans specifying stopovers or terminal area delays require separate messages be sent to the appropriate ARTCC's for each segment. Unless otherwise covered by a letter of agreement, treat flight plans proposing special use airspace delays in the same manner. Separate messages are also required for any other en route delays if a change of altitude stratum is proposed at the delay point. See **6-12c(13)(e)(3)(i)(bb)** for delays not involving a change of altitude stratum.

7. Flight plan messages relayed through ARTCCs to terminal facilities may be entered as a single message when all the following conditions are met;

(a) The entire flight will remain within the terminal airspace.

(b) No full stop landings are involved

(c) Appropriate remarks are included.

8. Some fields contain the necessary functions to operate the teletypewriter stuntboxes and computer teletypewriter adapters, and are designated by alpha characters. Do not separate these fields with spaces.

**c.** The complete message contents, the order of data, the number of characters allowed within any data field or element, and any associated operational procedures or restrictions are as follows:

1. (Alaska — Not Applicable) Start of Message Code (Field A) — Three characters (required first in every message ) composed of carriage return, carriage return, line feed (<<≡).

2. (Alaska — Not Applicable) Preamble Line (Field B) — Consisting of originator, priority, and addresse(s).

3. End of Line Function (Field C) — Same as (1) above (<<≡).

4. Source Identification (Field OO) — Nine or ten characters required, followed by a space character in the following order:

(a) The three character address of the originating FSS or two character identifier of the originating airline office.

(b) Four characters (digits) to indicate time (in UTC) the flight plan was composed by the originator.

(c) Three characters (digits) representing the number of the message, e.g., "021." Begin number series daily at 0000Z. Alaska — number IFR flight plans in accordance with 7110.80 paragraph 2-11.

**Note.** — There are no spaces between (a), (b) and (c) above.

5. Message Type (Field 01) — The letters "FP" followed by a space character.

6. Aircraft Identification (Field 02) — Consists of two to seven characters, followed by a space character. The first character of the identification must be a letter.

(a) Phrases such as "Flynet," "Snow Time," etc., which do not identify specific aircraft but are supplemental data defining a special mission or function shall be contained in remarks (field 11).

(b) For foreign aircraft identifications with a numeric as the first character, insert an X as the first character, and explain in the remarks section.

7. Aircraft Data (Field 03) — Consists of two to nine characters followed by a space character. Aircraft data within the field may vary from one to three elements consisting of:

(a) Number of aircraft (when more than one) and/or heavy aircraft indicator "H." This element contains a maximum of two characters followed by a slash.

**Examples. —**

2/
H/
3H/
10/

(b) Type of Aircraft. This element is mandatory and contains two to four characters consisting of the authorized aircraft designator as contain in the FAA Contractions Handbook (7340.1). Enter military designators of aircraft omitting prefixes and suffixes pertaining to aircraft mission or model.

(c) Equipment Suffix. This element is optional and consists of a slash followed by one letter which is one of the approved designators identifying transponder and/or navigation gear.

8. Airspeed (Field 05) — Consists of two to four characters followed by a space character. This field shall indicate the filed true airspeed in knots.

9. Departure Point or Coordination Fix (Field 06) — Consists of two to twelve characters followed by a space character. This field contains the departure point or fix at which an airfile will pick up IFR. It must be a fix, not an airway, and for proposed departures must duplicate the first element of the route of flight (field 10). For airfiles, it must duplicate the fix following the element, VFR, in the route of flight.

10. Proposed Departure Time (Field 07) — Consists of five characters followed by a space character. This field contains the letter "P": followed by a four digit time group (in UTC).

11. Requested Altitude (Field 09) — Consists of two to seven characters followed by a space character. Altitudes or flight levels, as appropriate, shall be expressed in hundreds of feet but without leading zeros. The letters "OTP" shall be entered in this field to indicate a requested altitude of VFR conditions on top. Blocked altitudes are indicated by entering the lower altitude of the requested block, the letter "B," and the higher altitude of the block (e.g., 80B100, 240B270) with no intervening spaces.

12. End of Line Sequence (Field C) — Three characters, composed of carriage return, carriage return, line feed. The first occurrence of field C shall always follow field 09 of the message. Any time a subsequent end of line sequence becomes necessary, if used within field 10, it must be preceded by the appropriate element separator (not a space). If used within field 11, field C may be entered at any point within the remarks sequence.

13. Route of Flight (Field 10) — The route of flight consists of departure point, the route of flight, and normally a destination; followed by a space character:

(a) Field 10 is a fixed sequence field and must begin with a fix (e.g., fix, airway, fix, airway, etc.). The last element may be a fix or one of the route elements VFR, DVFR, or XXX. An element is separated from another element by a period character.

(b) When consecutive fix elements or route elements are filed, the fixed sequence format is maintained by inserting two period characters between the filed field 10 elements (e.g., fix .. fix or airway .. airway).

(c) When a pilot files an airway .. airway combination, obtain, if possible, the point of transition and insert it in the transmitted flight plan. If the point of transition is not named, insert the first named fix encountered along the second airway within the route immediately following the second airway and repeat the second airway following the fix (e.g., SGF.J105.J24.-STL.J24). The foregoing does not apply if the first encountered fix happens to be the next filed junction point within the route.

(d) The slash character (/) is used to file a latitude/longitude fix or in describing ETE.

(e) The maximum number of filed field elements for computer addressed flight plans is 40 (32 in flight plans transmitted to ZCC, ZCN and ZCW). Double period insertions do not count against the 40 element limitation. Transmit flight plans filed exceeding the route element limitation to the ARTCC, not its computer.

(1) Fix Descriptions — A fix must be filed in one of the following ways:

(i) Fix Name — Domestic, Canadian and International identifiers of two to five alphanumeric characters.

(ii) Fix Radial Distance — Consists of eight to eleven alphanumeric characters in the following sequence — two to five characters identifying a navigational aid, three characters of azimuth expressed in degrees magnetic, and three characters of distance expressed in nautical miles from the navigational aid. Zeros preceding a significant character shall be entered before the azimuth and distance components as required to assure the transmission of three characters for each.

(iii) Latitude/Longitude — Consists of nine to twelve characters entered as follows — the latitude shall appear as the first component as four numbers (trailing zeros required) with an optional letter "N" or "S" appended. If the optional letter is omitted, North is understood. Latitude shall be separated from longitude with a slash (/) element separator. Longitude shall appear as the second component as four or five digits (trailing zeros required, leading zero optional) with an optional letter "W" or "E" appended. If the optional letter is omitted, West is understood.

(2) Route Descriptions — A route must be filed in one of the following ways:

(i) Airway — The official airway designator must be filed.

(ii) Coded Routes — Coded routes are a shorthand method of describing a route segment or segments which may have an altitude profile described, an adapted airspeed within the route, re-entry or loop routes as an option or a time delay at a fix within the route as an option. Some of the principal uses of coded routes are as follows:

(aa) Standard Instrument Departure (SID) — SIDs, if used, must be filed by the computer code designator as the second element of field 10 and followed by the transition or exit fix.

(bb) Standard Terminal Arrival (STAR) — STARs, if used, must be filed by the computer code designator as the next to last element of field 10 and be immediately preceded by the entry or transition fix.

(cc) Published Radials — Published radials, e.g. within a preferred route, are considered airways. Do not file unpublished radials.

**Examples. —**

.RBV020
.JFK053.DPK017

(dd) Military Routes — Certain military used routes, e.g. Military Training Routes (MTR), Air Refueling Tracks/Anchors, etc., are considered coded routes. The route designator must be preceded and followed by the entry and exit fixes in terms of fix/radial/distance (FRD) and re-entry information may be suffixed to certain military coded routes, as follows:

[1] The entry and exit fix must be associated with a fix on the route and the entry fix must be prior to the exit fix on the route.

**Examples. —**

TNP355025.IR252
PKE107012

[2] Routes having reentries for a single Strategic Training Range (STR) site shall contain the entry of alternate entry fix in terms of FRD, the route designator followed immediately by a plus sign (+), either the letter "R" (1st STR site) or "S" (2nd STR site) and a digit indicating the number of reentries.

**Examples. —**

(FRD) IR240 + R2 (FRD)
(FRD) IR240 + S3 (FRD)

$^{3}$ Routes having reentries for two STR sites shall contain the entry/alternate fix in terms of FRD, the route designator followed immediately by a plus sign (+), the letter "R," and a digit indicating the number of reentries on the first STR site, immediately followed by second plus sign (+), the letter "S," and a digit indicating the number of reentries on the second STR site.

**Examples. —**

(FRD) IR240+R2+S3 (FRD)

$^{4}$ STR routes must be entered and exited at the respective primary fix. Alternate STR routes must be entered/exited at the alternate entry/exit fix. The routes must be identified by an individual name.

**Examples. —**

(FRD) IR240+R2(FRD)(Primary)
(FRD) IR240A+R2(FRD)(Alternate)

(ee) North American Routes (NAR) — NAR routes are numerically coded over existing airways and route systems from and to specific coastal fixes serving the North Atlantic.

**Examples. —**

.NA50
.NA9

(ff) Stereo Route — A stereo route must specify a prestored stereo tag. A FP message may be entered with a stereo tag as the only field 10 entry, which causes the field 10 data stored for the stereo tag to be substituted for the stereo tag and processed as the filed field 10; additionally, the filed departure point (field 06) must agree with the stored departure point.

(gg) Incomplete Route Indicator (XXX) — When XXX, the incomplete route indicator, appears in field 10, the element preceding the XXX element must be a fix.

(hh) Visual Flight Rules (VFR) or Defense Visual Flight Rules (DVFR) element — When VFR or DVFR is the second element of field 10, the filed fix following VFR or DVFR must be internal to the center area to whom the flight plan was initially submitted. When VFR or DVFR is other than the second element in field 10, the element preceding the VFR or DVFR must be a filed fix.

(3) Fix Suffix

(i) En Route Delay Suffix—Consists of an element separator (/) followed by the letter D, followed by the hours and minutes separated by a plus sign (+). Must be appended to a fix.

**Examples. —**

.STL/D1+30
.PKE107012/D2+05

Use of this suffix is limited to the following cases:

(aa) Aerial Refueling Tracks and Anchors. The suffix is appended to the entry fix.

**Example. —**

.ICT248055/D0+30.AR330

(bb) En route delays not involving a change of altitude stratum and not involving a stopover, terminal area delay or special use airspace delay unless specifically covered by a letter of agreement with the receiving ARTCC.

(ii) Estimated Time En Route (ETE) Suffix—Consists of an element separator (/) and four digits appended to the destination. Leading zeros are required and the time en route is expressed in hours and minutes.

**Example. —**

.STL/0105

(4) A period is not required after the last element of field 10. If remarks (field 11) are present, a space is required after the last element of field 10. If remarks are not present, no space is required and field E (End of Text) should be the next entry.

14. Remarks (Field 11) — Consists of the remarks code character — a clear sky symbol (figures shift C on most non-FAA keyboards) or an overcast sky symbol (figures shift B on most non-FAA keyboards) — and the remarks. Remarks are considered mandatory or optional and should be limited to those pertinent to air traffic control. Spaces are permitted within the remarks field to separate words or contractions.

**Note. —** The overcast sky symbol limits the transmittal of the remarks to the center controlling the point of departure. This should be used when it is known that the remarks are only pertinent to the center controlling the departure airport/point.

(a) Mandatory Remarks — These remarks shall be transmitted in field 11 whenever a pilot files the information in his flight plan. A mandatory remark is required whenever there is a modification to the flight plan by the specialist.

(1) If it is necessary to make modifications to the filed route of flight for the purpose of achieving computer acceptance of the input due, for example, to correct fix or airway identification, "FRC" shall be inserted in the remarks field. This indicates to the controller that a full route clearance must be issued. "FRC" shall always be first in the case of intracenter remarks (overcast sky symbol). It must be emphasized that INPUT OPERATORS ARE LIMITED TO MAKING ONLY THOSE CHANGES REQUIRED FOR COMPUTER

ACCEPTANCE. Modifications such as those to conform with traffic flows and preferred/recommended routings shall only be made by the pilot (or his operations office) or the controller responsible for initiating the clearance to the aircraft.

(2) When a pilot files an FAA assigned 3-letter aircraft company designator in the remarks section of the flight plan, the authorized radio-telephony callsign must be forwarded in the remarks field. This radio-telephony callsign will always follow a clear sky symbol.

(b) Optional Remarks — These remarks shall be transmitted when pertinent to air traffic control and can revert to mandatory status for some military flight plans.

(1) In the case of applicable military flights, "NOPAR" shall always be the first item in for intercenter remarks (clear sky symbol).

(2) Remarks for military flight plans filing an IR route must contain the IR route designator, entry time prefaced by the letter E, exit time prefaced by the letter X, and MARSA, when applicable. Remarks for flight plans filing a terminal area delay must contain the airport identifier at which the delay will occur followed by the letter D followed by the duration of the delay in hours plus minutes, followed by the destination airport. These should be the initial items in the remarks field, unless (1) or (2) above applies, and should be in order of occurrence.

15. End of TEXT Signal/End of Message Function (Field D) — Consists of carriage return, carriage return, 6 line feeds,and 4 N's (<<6≡ NNNN).

**d.** Additional Messages:

The following messages are eligible for input to center computers via Service B in addition to the Flight Plan (FP) message.

1. Remove Strips (RS) — The purpose of the RS message input is to advise the computer that data on a particular flight is no longer valid and in effect cancels the flight plan and removes it from computer storage.

(a) Eligibility — RS messages may be entered only for flight plans which:

(1) Are proposed flights.

(2) Have been previously entered by the same source entering the RS message.

(3) The flight plan is inactive, e.g., a departure strip must not yet have been printed.

Otherwise, the following rejection message is returned:

"REJECT — NOT YOUR CONTROL"

(b) Format — Fields 01 (Message type) and 02 (Aircraft Identification) are required.

**Example. —**

.RS TW138

2. Amendment Message (AM) — The purpose of the AM message is self-explanatory.

(a) Eligibility — Same as for the Remove Strip (RS) message (above).

(b) Format — Fields 01 (Message type) and 02 (Aircraft Identification) are required Field 03 (Aircraft data), 05 (Speed), 06 (Departure Point), 07 (Proposed Departure time), 09 (Requested Altitude), 10 (Route) and 11 (Remarks) are optional.

**Examples. —**

| Message Type | Aircraft Identification | Field to be Revised | New Field Data | Field to be Revised | New Field Data |
|---|---|---|---|---|---|
| AM | UA466 | 07 | 0300 | | |
| AM | AA 4355 | 10 | ORD.J60.DEN | | |
| AM | TW179 | 07 | P0800 | 08 | 350 |

(c) Restrictions — If field 02 is to be amended, no other field may be amended in the same message. If field 02 and other fields are to be amended, send a RS message and reenter the entire corrected flight plan. If an attempt is made to amend field 02 within a multiple amendment message, or to amend field 02 to "M," the following rejection message is returned:

"REJECT — INVALID AMENDMENT"

Field 07 Amendments — An attempt to amend field 07 to anything other than a P-time is not allowed. If such an amendment is attempted, the following error message is returned:

"COFIE INVALID TIME PREFIX"

Amendment to Fields 06, 07, and 10 — Where fields 06, 07, and 10 are amended with a single AM message, the following rules apply:

(1) The amended field 06 replaces the previously stored coordination fix (field 06).

(2) The amended field 07, with appropriate letter prefix, replaces the previously stored coordination time (field 07).

(3) The amended route data (field 10) may completely replace the previously filed field 10, or may be merged with the filed field 10.

(4) If the last element of the amended route data is followed by a destination indicator (↓), this last element becomes the new destination fix.

(5) When amended route data is merged with filed data, it replaces all data between the departure point and the first non-amended element remaining in the field. The last element of the amended data must match the first element of the remaining non-amended data, otherwise the following rejection message is returned:

"REJECT — (last element) CANNOT MERGE"

Amendment to Field 10 only — Except as permitted above, a field 10 amendment must be the only field amended; no other field may be amended with the same message. Otherwise, the following is returned:

"REJECT — INVALID AMENDMENT"

3. Correction Message (CM) — When an erroneous input flight plan is identifiably correctable, an error message is generated to the sender when the sender is within the departure center's adapted boundaries.

(a) Eligibility — CM messages may be entered only for the period for which the departure center's program is adapted, normally 5 minutes. After that time, the flight plan in error drops out to the center primary A position for reentry. The sender has primary responsibility for corrective action.

**Note. —** Error messages are generated only on messages from sending stations within the adaptation parameters of the departure center and for only that portion of the route within that center's adapted boundaries. Other flight plans in error are referred to a primary A position.

(b) Format — Responses to error messages shall be transmitted in the form of a CM message within the time parameters adapted for your center.

**Example. —** ARTCC generated error message:

| Sending Facility | MSG Type | MSG NR | Field in Error | Data in Error | Reason |
|---|---|---|---|---|---|
| DCA | Error | 123 | 08 | 9A | FORMAT |

CM FORMAT:

| ARTCC | FIELD 00 | MSG TYPE | CORRECT DATA |
|---|---|---|---|
| ZCD | DCA 1820123 | CM | 090 |

(c) When a CM message in response to an error message results in any change to a pilot filed field 06 departure point or field 10 (Route of flight), once the flight plan has been accepted, an AM message shall be sent to add a field 11 intracenter remark. In remarks, insert "FRC PILOT FILED (original data)."

(d) Should a "not your control" response be received, do not retransmit the flight plan or the AM. Confirm center receipt of the flight plan or

AM (FRC/REMARKS) via interphone with the primary A position.

### COMPUTER FLIGHT DATA INPUT CHART

| *Field* | *Element* | *Example* | *Requirements* |
|---|---|---|---|
| A | Start of Message (SOM code) | <<≡ | Required for SOM recognition |
| B | Preamble Line | OKC FF ZCF | Provides originator, priority, and addressee |
| C | End of Line (EOL) Function | <<≡ | Required to end Preamble line |
| D | EOT/EOM | <<6≡NNNN | Terminates message |

## 6-13. COORDINATE RNAV ROUTES

When accepting flight plans for coordinate RNAV routes ensure that the route of flight after the departure fix is defined by latitude/longitude coordinates and a fix identifier.

**Example. —**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| MIA | SRQ | 3407/10615 | 2407/11546TNP | LAX |

1. Departure Airport
2. Departure Fix
3. Intermediate Fix or Turning Point
4. Arrival Fix
5. Destination Airport

## 6-14. thru 6-19. RESERVED

## Section 3. VFR FLIGHT PLAN HANDLING

### 6-20. FLIGHT PLAN ACTIVATION

Handle departure reports as a routine radio contact in accordance with paragraph 4-14. If a departure report has not been received within one hour of the proposed departure time and specific arrangements have not been made to activate the flight plan, cancel and file the proposed flight plan.

### 6-21. FLIGHT NOTIFICATION

**a.** Departure stations shall forward a flight notification message to the designated tie-in FSS. Telephone or interphone when available shall be used for flights of 30 minutes or less. The flight notification message shall contain the following information:

1. Aircraft identification
2. Aircraft type
3. Destination
4. ETA
5. Remarks

**Examples. —**

DCA FF DET
N2346F AC21 DTW 1303
BWG FF LOU
N1234 BE90 LOU 1500 FP PAH

**b.** If the pilot elects to close the flight plan with a station other than the designated tie-in FSS, send the flight notification message with remarks (e.g., FIRIV JXN) to both stations.

**Examples. —**

DCA FF DET JXN
N2346F AC21 DTW 1303 FIRIV JXN

The station with which the pilot elects to close shall assume destination station responsibilities. The designated tie-in FSS assumes no responsibility.

**c.** If the pilot advises of stopover points, send the flight notification message with remarks (e.g., LNDG CLE) to the appropriate stations as required by subparagraphs **a** and **b** above.

**d.** Departure stations shall transmit the flight notification message to the guard station (see M-59 chart handbook 7110.80), that assumes FSS tie-in destination responsibilities when the ETA will occur during the period that the designated tie-in part time FSS is closed.

**Note.—** Use the Location Identifier Handbook (7350.4) as a reference for civil and military flight plan message routing and airport search purposes. If a civil public use airport is not listed use the Airport/Facility Directory.

### 6-22. OUTBOUNDS DEPARTING FROM OUTSIDE FLIGHT PLAN AREA

**a.** Accept flight plans regardless of departure point. Forward VFR flight plan proposals for aircraft proposing to depart from outside the facility's flight plan area to the tie-in FSS for the departure point in the following format:

1. Aircraft Identification
2. Aircraft Type
3. Departure Point
4. Destination
5. Proposed Departure Time/ETE
6. Remarks

**Example. —**

PAH FF BWG
N1234 BE90 BWG LOU P1330/0130
NNNN

### 6-23. SUSPENSING FLIGHT NOTIFICATION MESSAGE

"Suspense" the flight notification message until acknowledgment is received from the destination station, then file it in the "completed file." If an acknowledgment is not received before the ETA, use the telephone to assure delivery.

**a.** When acknowledgment for a message is required and has not been received within a reasonable time, transmit the signal "QSLQ" and the complete aircraft identification to the addressee.

**Examples. —**

SAT FF BNA
QSLQ N12345

**b.** *Alaska*-Shall receive acknowledgments from stations in the contiguous United States for flight notification messages.

### 6-24. ACKNOWLEDGING FLIGHT NOTIFICATION MESSAGE OR PROPOSAL

Acknowledge receipt of a flight notification message or proposal as soon as practicable after receipt. Prefix the acknowledgement with the letter "R" followed by the aircraft identification.

**a.** Use the full aircraft identifier, preceded by a space character, to acknowledge the message when transmitting to Automatic Weather and Notam System (AWANS) or Flight Service Automation System (FSAS) equipped facilities. 6 1

b. **Use the last three characters of the aircraft identifier to acknowledge the message to all other facilities.**

**Examples. —** CRW FF CLE
R N123JH (AWANS or FSAS)
TLH FF JAX
R3JH (Non-automated FSS)

## 6-25. MAJOR FLIGHT PLAN CHANGES FROM EN ROUTE AIRCRAFT

Assume departure station duties when a major flight plan is received from an en route aircraft.

**a.** When an aircraft on a VFR flight plan changes destination obtain, as a minimum, the following information:

1. Aircraft identification.
2. Aircraft type.
3. Departure airport.
4. Old destination.
5. Present position.
6. Altitude and route.
7. New destination.
8. Estimated time en route.

**b.** Transmit a flight notification message to the original and new destination stations containing the aircraft identification, aircraft type, new destination, new ETA, and remarks, e.g., DEPD ROA.

**Examples. —**

HTS FF LOU STL

N67XF C185 STL 1649 DEPD ROA

**c.** When an aircraft changes from IFR to VFR flight plan, obtain, as a minimum, the following information, and transmit a flight notification message to the destination station:

1. Aircraft identification and type.
2. Departure station.
3. Position.
4. Route.
5. Destination.
6. Estimated time en route.

**Examples. —**

LAX FF ELP

N3745C BE55 ELP 2341 DEPD SFO

**Note.—** Obtaining the name of the original departure station provides a source of additional information in case the aircraft becomes overdue.

## 6-26. CHANGE IN ETA OR EXTENSION OF ETE

When an aircraft extends ETE or provides a new ETA, forward this information to the destination station. The destination station shall acknowledge and thereafter use the new ETA as the standard for any necessary followup action; e.g., QALQ message, etc.

**Examples. —**

OKC FF HBR

N456Z E1212

OKC FF HBR

N4568Z E1+00

## 6-27. CIVIL FLIGHT PLAN CLOSURE

Do not transmit arrival reports except under unusual circumstances or in the following cases:

**a.** Arrival, or any other information involving FAA, or Canadian MOT aircraft, shall be transmitted to any facility requested by the pilot.

**Examples. —**

LAX FF DCA

N2 A0839

**b.** When a pilot closes his flight plan with other than the destination station, transmit a closure message to the destination station. The destination station shall acknowledge.

**Example. —**

ATL FF MEM

N2345 C1217

**c.** When a pilot closes his flight plan with a destination station that has not received a flight notification message, ask him for the name of the departure station. Transmit an arrival message to the departure station, which shall, in turn, relay the arrival information to the station holding the flight notification message in the "active" file.

**Note.—** Flight notification messages are occasionally routed to the wrong destination because of identical or similar sounding name.

**Examples. —**

SAT FF ROW

N12345 A1745 FPNO

## 6-28. PART-TIME FSS CLOSURE ACTION

Part-time facilities shall forward all information on inbound flights and outbound flights whose ETA is after or within 1 hour of the scheduled closing time to the designated guard FSS.

## 6-29. ALASKA SPECIAL INSTRUCTIONS

Stations in Alaska shall insert ICAO headings and endings and number all message traffic.

**a.** Control stations are responsible for locations served by remote control outlets and single frequency outlets.

**b.** Control stations shall perform destinations station duties when their associated part-time facilities are closed.

**c.** Stations originating messages to part-time facilities shall also address the control station. Only the station assuming destination station responsibilities shall acknowledge.

## 6-30. thru 6-39. RESERVED

## Section 4. MILITARY FLIGHT PLAN HANDLING AND OPERATIONS

### 6-40. FLIGHT PLAN HANDLING

Accept military flight plans from any source including collect telephone calls. When a departure report is received transmit a flight notification message to the destination base tie-in station as specified in the Location Identifiers Handbook, 7350.5. A flight notification message may be sent before actual departure for flights of short duration if BASE OPS agrees. Transmit the following items:

**a.** Type of flight plan.

**b.** Aircraft identification.

**c.** Type aircraft.

**d.** Departure point.

**e.** Destination.

**f.** ETA.

**g.** Remarks, e.g., coded data pertinent to services, passengers or cargo.

**Reference—** DOD Flight Information Publication; General Planning document.

**Examples. —**

SAV FF SAT
VFR R12345 U9 SVN SKF 1920 AP3NP3

### 6-41. SUSPENSING FLIGHT NOTIFICATION MESSAGE

"Suspense" the flight notification message until acknowledgment is received, then file it in the "completed" file. If an acknowledgment is not received within the following time periods, use the telephone to assure delivery:

**a.** Before ETA if ETE is 30 minutes or less.

**b.** Thirty minutes after departure if ETE is between 30 minutes and two hours.

**c.** One hour before ETA if ETE is two hours or more.

**d.** Thirty minutes after departure if RONVIP information is contained in remarks.

### 6-42. ACKNOWLEDGMENT

Acknowledge receipt of a military notification message by transmitting the contraction "R" followed by the last three characters of the aircraft identification. Notify BASE OPS of the inbound flights; and if the aircraft is VFR, "suspense" the message until arrival or closure information is received.

**Note.—** All unnumbered flight movement messages to Aviation Weather and NOTAM System (AWANS) facilities shall be acknowledged with full aircraft identification.

### 6-43. "STOPOVER" FLIGHT NOTIFICATION

Address military stopover flight notification message to (and obtain acknowledgments from) stations serving all destination airports, civil and military.

**a.** Transmit items a through g paragraph 6-40, and the following in order listed:

1. For each subsequent leg:
   (a) Destination
   (b) ETE
   (c) Remarks applicable to leg only.
2. Remarks applicable to entire flight.
3. Void time (compute by adding total time inflight and total time at each stopover point to original departure time).

**b.** Separate stopover legs by inserting a slant (/) at the end of each leg except the last. Begin each leg on a new line.

**Examples. —**

DCA FF CHS JAX MIA
IFR VV12345 P3 ADW CHS 1300/
NZC 1+30 A5 JONES DP10 AP5 S/
MIA 2+30 NO DE-ICING EQUIPMENT
011830

**c.** For composite flights, specify type flight plan as the first item of each leg.

**d.** When en route delays are involved, include delay time in ETE.

### 6-44. ACTION BY ADDRESSEE

All addressees shall acknowledge for military stopover flight notification/departure messages imediately upon receipt, and take the following action:

**a.** IFR flight.

1. Notify BASE OPS of the inbound flight.
2. Upon request, deliver flight plan amendments to ARTCC.
3. Forward the actual departure time to the tie-in FSS for the next destination.
4. File all related messages when acknowledgment for the departure message is received.
5. If no information is received, e.g., departure time, revised ETA, etc., indicating that the flight is still active prior to the void time, note this on the flight notification message and file.

**Examples. —**

CHS FF JAX
VV12345 D1345

**b.** VFR flights.

1. Notify BASE OPS of the inbound flight.

2. "Suspense" the message and assume destination station responsibility.

3. Forward the departure time to the tie-in FSS responsible for the next destination, and assume departure station responsibility.

4. If no information is received, e.g., departure, revised ETA, etc., indicating that the flight is still active prior to the void time, note this on the flight notification message and file.

## 6-45. EN ROUTE CHANGES

When an en route aircraft changes his ETA, changes from VFR to IFR, or requests that other significant information be forwarded, transmit this information to the destination station. When a change of destination is received, transmit a revised flight notification message to the departure point and to the original and new destination. Include the type of flight plan, aircraft identification and type, departure point, original destination, position and time, the words "CHGD DESTN," new destination, ETA, and remarks.

**Example of change of destination—**

HTS FF DCA LOU STL

IFR A12345 F89 ADW SDF OVR ECB 1730

CHGD DESTN BLV 2030

## 6-46. CIVIL AIRCRAFT LANDING/DEPARTING MILITARY BASE

**a.** Apply military flight plan procedures to all civil aircraft landing at military bases.

**Note.—** It is the civil pilot's responsibility to obtain permission (from military authorities) to land at a military base.

**b.** Apply civil flight plan procedure to civil aircraft departing military bases en route to civil airports.

## 6-47. ARRIVAL REPORTS

Transmit arrival reports to the departure station only when:

**a.** Requested by BASE OPS.

**b.** Special military flights arrive.

**Example.—**

DCA FF MIA

VV12345 MIA A1212 ADW

**c.** When no flight notification message received.

**Example. —**

DCA FF MIA

VV12345 MIA A1212 ADW FPNO

## 6-48. FLIGHT ADVISORY MESSAGES

**a.** Issue advisories to aircraft in flight only when hazardous conditions arise. If the aircraft destination is a civil airport, the destination FSS is responsible for screening weather, and issuing advisories to inbound aircraft. If the destination is a military base, the responsibility rests with BASE OPS.

**b.** The tie-in station originating the advisory or receiving it from the originating BASE OPS shall determine the FSS nearest the aircraft's estimated position for VFR flights, or the appropriate center for IFR flights, and transmit the message to that location. Do NOT give these messages ALCKT dissemination, but, normally limit the addressee to one facility. Include in the message text: "FLT ADVY," aircraft identification and type, route of flight, in that order. The last item of the text shall be the identifier of the originating BASE OPS or source.

**Example. —**

MKC FF ZID

MKC 005 ZID

FLT ADVY. A12345 T38 GVW J80 DAY

DAY WEA BLO LNDG MIN. SUG PROCD

CVG. ADZ INTENTIONS. DLVR 1625

GVW BASE OPS.

**c.** If unable to deliver the flight advisory to the aircraft within 15 minutes after the requested delivery time, inform the originator and file the message.

## 6-49. MISCELLANEOUS MESSAGES

Accept and forward messages (from any military authority) that concern aircraft movement, national defense, safety of flight, or emergencies. ALCKT select code or codes shall not be used when handling military NOTAMs, Airmen Information etc., or weather on the BDIS system.

**a.** FSS tie-in stations shall accept from military bases, which do not have a drop on the air weather net nor direct communications with an adjacent BASE OPS, weather reports and NOTAM's for forwarding to the adjacent BASE OPS which has the military weather circuit capability. In all cases the originating BASE OPS shall designate the BASE OPS to which these messages shall be delivered.

**b.** FSS tie-in stations shall inform military operations offices of any flow control service messages which might affect their operations.

## 6-50. ELECTRONIC COUNTER MEASURE (ECM) ALERTS

Transmit, via Service B, ECM messages to tie-in station serving the addressees. If acknowledgments are not received within one hour, deliver via telephone.

**Example. —**

DCA DD MKC ZKC

DCA 001 MKC ZKC

(text)

NNNN

**Note.—** Only stations addressed following the message number will acknowledge.

## 6-51. SPECIAL MILITARY FLIGHTS

a. Advise the ARTCC of flight notification messages, progress reports, changes en route, and related messages concerning Presidential or Vice Presidential flights.

b. *Alaska*—In addition to above, give advance notice to all RCC's along the route of flight. Telephone SARCC 752-0227, or 752-0128. Initiate COMMUNICATIONS search procedures if arrival not received within 15 minutes after ETA and immediately notify ANRCC (Alaskan NORAD Region Control Center).

## 6-52. MAC AND SAM FLIGHT MESSAGES

Forward MAC and SAM flight messages containing the request "PASS TO MAC ACP" to the airlift command post specified by the pilot.

## 6-53. MILITARY FOREIGN AND OVERSEAS FLIGHTS

Generally, all military foreign and overseas flights are required to clear through specified military bases. Pilots normally will not file flight plans directly with an FAA facility unless BASE OPS is not available. BASE OPS will forward an ICAO-type flight plan message via their tie-in station for relay through the AFTN. BASE OPS should specify all addressees, both ATC and operational, in accordance with ICAO standards and military regulations.

## 6-54. HANDLING OUTBOUND FLIGHTS FROM U.S.

For outbound flights from the U.S., departure BASE OPS may require an arrival message from the destination. Handle as follows:

At the request of BASE OPS, the departure tie-in station will include "REQ ARR" in the remarks section of the ICAO flight plan. The tie-in station may terminate suspense action only after receipt of an arrival message and the information forwarded to BASE OPS.

## 6-55. HANDLING INBOUND FLIGHTS TO U.S.

Upon receipt of an inbound flight plan with "REQ ARR" in the remarks section, the destination tie-in station shall suspend the flight plan until arrival information is received from BASE OPS and forwarded to the departure location.

## 6-56. USAF/USN UNDERGRADUATE PILOTS

To identify aircraft piloted by solo USAF/USN undergraduate student pilots operating in solo flight (who may occasionally request revised clearances because they normally are restricted to flight in VFR conditions), the aircraft identification in the flight plan shall include the letter "Z" as a suffix. Do not use this suffix, however, in ground to air communication.

**Note.—** USAF solo students who have passed an instrument certification check may penetrate cloud layers in climb or descent only. Requests for revised clearances to avoid clouds in level flight can still be expected. This does not change the requirement to use the letter "Z" as suffix to the aircraft identification.

## 6-57. AERIAL REFUELING TRACKS

Upon notification from the ARTCC or a scheduling activity that an established aerial refueling track will be activated, and all or part of the activity will take place outside of restricted/ warning areas or positive control area:

a. The tie-in FSS shall transmit a NOTAM(L) to all FSSs within 200 nautical miles of the track centerline

b. During pilot briefings, IFR refueling information will be provided upon request.

c. Applicable VFR refueling information shall be provided in all briefings.

## 6-58. MILITARY TRAINING ACTIVITIES

a. Unless otherwise covered in a letter of agreement, the tie-in FSS for an MTR scheduling unit, or MOA controlling ARTCC, shall transmit an unnumbered message including a date time group, via Service B, addressed to individual FSSs and ARTCCs within 100NM of an MTR/MOA as follows:

1. Tie-in FSS-On receipt of the daily MTR schedule from the military scheduling activity.

2. ARTCC-On receipt of a change to the published MOA activity schedule.

**Note 1.—** Activity schedule should be combined and transmitted as a single message whenever possible.

**Examples. —**

301200

IR104 1400-1440 60 AND BELOW

1545-1630 50 AND BELOW

1715-1810 80 AND BELOW

VR066 1330-1440 100 AND BELOW

1600-1655 30 AND BELOW

**Note 2.—** Some areas require extension of the 100NM rule to ensure complete geographical coverage. NFDC will identify those FSSs within 100NM of the route. Inquiries relative to FSS coverage should be referred to ATO-250 (NFDC).

**b.** A VR operation may be filed as a composite-flight, IFR-VFR-IFR. Unless the military base operations has the capability to do so, the tie-in FSS shall transmit the IFR flight plan data in separate messages to the appropriate ARTCC(s) in accordance with paragraphs **6-40 through 6-44.**

**c.** Specialists shall familiarize themselves with all MTRs and MOAs (or segments thereof) within 100NM of their facilities.

**d.** Upon request, FSSs shall furnish pertinent information on those MTRs and MOAs within 100NM of their facilities.

*Phraseology:*

CAUTION SHOULD BE EXERCISED WHEN CROSSING BETWEEN (geographical or NAVAID reference) AND (geographical or NAVAID reference). HIGHSPEED MILITARY JET AIRCRAFT WILL BE OPERATING 7,000 FEET AND BELOW BETWEEN 1200-1320Z.

**e.** Broadcast at H + 15 hourly and include on the PATWAS and TWEB (VOR and L/MF) a statement for MTR and MOA activity within 100NM of your facility, at least 30 minutes prior to the start of and until the activity is concluded.

*Phraseology:*

MILITARY TRAINING ACTIVITY ADVISORY-HIGH-SPEED MILITARY OPERATION(S) BEING CONDUCTED BELOW 10,000 FEET WITHIN 100NM OF FSS. CONTACT (name) FSS FOR DETAILS ON THIS ACTIVITY.

**f.** Information received from either the military scheduling activity or ARTCC that modifies an MTR and MOA schedule shall be transmitted by unnumbered message via Service B as defined in **6-58a.**

**Note.—** The above procedures do not preclude a specialist from exercising his/her own best judgment in providing further assistance when there is the slightest doubt the adequacy of data being furnished to alert a pilot to the existence of an MTR or MOA.

## 6-59. CIRVIS MESSAGES HANDLING

**a.** JANAP 146 (E), "Canadian-United States Communications Instructions for Reporting Vital Intelligence Sightings" is an unclassified, non-registered publication, prepared by the U.S. Military Communications-Electronics Board in conjunction with Canada, for joint U.S. and Canadian use. An Air Force pamphlet entitled "CIRVIS" which contains extracts from JANAP 146 (E) should be in all facilities' files.

**b.** Relay CIRVIS reports by the most expeditious means to the appropriate ARTCC.

## 6-60. PACIFIC-DELIVERY OF CIRVIS/MERINT MESSAGES

**a.** Pacific Region FAA facilities shall immediately pass the CIRVIS message to the appropriate ARTC Center. Specific relay and/or delivery responsibilities are as follows:

1. Hawaiian Island facilities: Interphone to Honolulu ARTCC; transmit confirmation message addressed to the Air Defense Control Center (ADCC) and Hawaiian Sea Frontier Operations Control Center.

2. Samoa CAP/IS: Transmit message addressed to Honolulu ARTCC, the Air Defense Control Center (ADCC), and the Hawaiian Sea Frontier Operations Control Center.

**Example. —** (Report as filed by Samoa CAP/IS)

SS PHNLZO PHNCYX

232020 USTUYF

CNTR PHNL. ADCC KUNIA. HAWSEAFRON

OPERATIONS CONTROL CENTER KUNIA. CIRVIS

REPORT PA818 SIGHTED XXXXX XXXXX XXXXX

(TEXT) XXXXX JONES CAP/IS 23202

**b.** The Honolulu and Guam ARTC Centers will forward the CIRVIS message immediately by direct interphone to the military commands designated by CINCPAC. These military addresses will be responsible for forwarding the information to other military services, or higher headquarters, as required.

**c.** CINCPAC has designated the following military commands as addressees for reports originating in the Pacific area and handled by FAA facilities:

1. For reports originating in the Honolulu FIR:

Air Defense Control Center, Kunia (ADCC); Hawaiian Sea Frontier Operations Control Center, Kunia.

2. For reports originating in the Guam FIR:

SAC Command Post, Anderson Air Force Base, Guam; COMNAVMARIANAS Operation.

The action required of the military commanders upon receipt of a sighting report is dictated to a large extent by whether the word CIRVIS appears as the first word of the report. This word indicates that the information may be of vital importance to the security of the United States, and requires certain specific action on the part of various military commanders. For this reason, the word "CIRVIS" shall appear in sighting reports handled by FAA facilities ONLY WHEN SO DESIGNATED BY THE OBSERVER. Sighting reports received without this designation shall be accepted and forwarded verbatim to the addressee indicated above without an identifying prefix; e.g., "PA818 REPORTS SIGHTING VESSEL...etc." All sighting reports, whether or not designated as CIRVIS, shall be assigned the priority prefix "SS" to ensure rapid handling. Because of the strategic location of Wake and Samoa, CINCPAC is also interested in reports from ground observers concerning questionable or suspicious actions on the part of unidentified aircraft or vessels in the vicinity of these islands. Such reports shall be given the same distribution as CIRVIS reports.

**d.** Sighting Reports (MERINT) that may be received by Pacific Region FAA facilities, particularly at Wake and Samoa, shall be given the same distribution as described for CIRVIS reports. Instructions concerning MERINT reports are contained in Chapter III of JANAP 146 (D).

**e.** All facilities shall maintain a copy of JANAP 146 (D) in a suitable binder and kept available for reference in the facility operations area.

### 6-61. 7602ND AIR INTELLIGENCE GROUP (AFIS) MESSAGES—CONTERMINOUS U.S. ONLY

To assist the 7602nd Air Intelligence Group in locating downed enemy aircraft during periods of hostilities, immediately forward all information about downed enemy aircraft to the appropriate ARTCC for relay to the NORAD Direction Center by the fastest means available.

### 6-62. thru 6-69. RESERVED

# Section 5. LAW ENFORCEMENT MESSAGES

## 6-70. LAW ENFORCEMENT ALERT MESSAGES

**a.** Safeguard such information from disclosure in accordance with FAA Order 1600.5. Handle such requests as follows:

1. Determine from facility records whether or not there is an effective alert on the same aircraft.

2. If an alert is outstanding, refer the other request to the initiating agency.

**b.** If credentials are not offered in person, ask to see them. Handle telephone request as follows:

1. Obtain the callers name, agency, and business telephone number.

2. Immediately thereafter, verify the telephone number through operator or directory assistance, call the number to confirm the caller's identity.

**c.** Refer all other requests, e.g., insurance adjusters, aircraft owners, to local police or FBI as appropriate, who may then request an alert message, except that Washington FSS shall refer such requests to the Office of Air Transportation Security.

**d.** Local FBI offices request shall be referred to their Alexandria, Virginia, FBI Field Office for dissemination through Washington FSS. U.S. Customs request shall be referred to their Washington Communications Center, and Drug Enforcement Agency (DEA) request shall be referred to the El Paso Intelligence Center (EPIC).

**e.** Obtain the following information from the requestors:

1. Requestor's identity (agency, person presenting request, business telephone).

2. Date.

3. Category of request (stolen aircraft or aircraft lookout).

4. Search area (specific or nationwide).

5. Description of aircraft, manufacturer's serial number.

6. Details for message text (when applicable, date, and place of theft, identities of suspects, direction headed, estimated range, etc.).

7. Agency or person to be contacted in event of aircraft's recovery or sighting, including the telephone number to be called.

8. Special handling instructions.

9. Determine if requestor has made NCIC entry regarding stolen aircraft.

## 6-71. TRANSMISSION OF MESSAGES

**a.** Transmit Stolen Aircraft Alerts nationwide as ALCKT messages (Reference 7110.80).

**b.** Transmit Aircraft Lookouts to those circuits in whose geographical areas the aircraft could be expected to operate.

**c.** Encode all messages, including supplemental and cancellations, to FAA Headquarters, Region, and center telecommunications staffs.

## 6-72. ALERT MESSAGES

**a.** Alert messages shall consist of all pertinent information provided by the requestor. Identify message type and initiating agency in first line.

**Example. 1—**

ROA FF NKA

CLN LE ALCKT SVC B

STOLEN ACFT ALERT. MILTON COUNTY VA SHERIFF.

N1234Z CSNA C150 SER 180X. RED/WHITE.

STOLEN MILTON CITY VA ARPT 5/22/84.

ACFT HDG SW. FUEL RANGE 600 MI. NO SUSPECTS.

DATA ENTERED NCIC. ANY INFO PHONE ABV SHERIFFS OFFICE 703/326/7622.

EASTON 221930

NNNN

**Example 2. —**

SAT FF XXXQ XXMM XXXU XXBB

CLN LE ALCKT SVC B

ACFT LOOKOUT BEXAR COUNTY TX SHERIFF

N3412F PIPER PA28

LCTN—CHIHUAHUA MEXICO

DESTN—SAN ANTONIO TX. IF LCTD NTFY ABV SHERIFFS OFFICE 512/781/3333

CNL 1/22/85.

JONES 151955

**b.** The originating FSS shall transmit a supplemental alert when requested by Air Transportation Security Divisions/Staffs, the requestor, or when in the judgment of the originating FSS, independent information necessitates a change. The supplemental alert shall reference the initial alert and repeat all necessary data required to supersede all prior alerts.

**Example. —**

ROA FF NKA

CLN LE ALCKT SVC B

SUPPL STOLEN ACFT ALERT. MILTON COUNTY

VA SHERIFF.
N1234Z CSNA C150 SER 180X RED/WHITE.
STOLEN MILTON CITY VA ARPT 5/22/84. ACFT
SERVICED MEMPHIS TN 5/23/84. BELIEVED
HDG W. FUEL RANGE 600 MI. NO SUSPECTS.
DATA ENTERED NCIC. FWD ANY INFO TO
NEAREST FBI OFC OR ABV SHERIFFS OFFICE
703/326/7222.
EASTON 231400
NNNN

## 6-73. CANCELLATION PROCEDURES

**a.** Stolen Aircraft Alerts remain in effect until cancelled by the originator, Air Transportation Security Division, or Summary. Aircraft Lookouts are in effect 7 days unless otherwise specified.

**b.** Transmit cancellation notices to facilities previously alerted.

**Example. —**

ROA FF NKA
CLN LE ALCKT SVC B
CNL STOLEN ACFT ALERT N1234Z
ACFT LCTD TULSA OK. SUSPECT IN CUSTODY.
EASTON 232010
NNNN

## 6-74. ALERT MESSAGE ACTION

**a.** Upon receipt of a law enforcement alert message, all FSSs within the designated search area shall:

1. Immediately alert and distribute copies of the alert to other FAA facilities over which they exercise normal communications guard such as GADOs, ACDOs, RAPCONs and ATCTs.
2. Check facility records for past 24 hours.

**b.** Upon receipt of knowledge concerning an aircraft for which a current alert message is held, do the following:

1. Forward any information on the aircraft to the originating FSS and the requestor when specified in the message.
2. Immediately notify the cognizant Air Transportation Security Division/Staff by the most rapid means.
3. Do not take any other action affecting the aircraft, cargo, crew or passengers not normally related to the job responsibilities.

## 6-75. STOLEN AIRCRAFT MESSAGE SUMMARIES

**a.** A summary listing the registration, type, and color of all aircraft reported stolen within the past 90 days is issued monthly and a semi-annual summary is issued for all current stolen aircraft alerts. All alerts not on the semiannual summary are cancelled.

**b.** Stolen Aircraft Summaries and Alerts may be distributed outside FAA to fixed base operators and law enforcement agencies at the discretion of the facility Air Traffic Manager. (Aircraft lookouts shall not be distributed outside FAA.)

## 6-76. thru 6-79. RESERVED

# Section 6. NONEMERGENCY PARACHUTE JUMPING

## 6-80. COORDINATION

All pertinent information received from pilots prior to and during parachute jumping activity shall be coordinated with other affected ATC facilities.

## 6-81. PREJUMP RADIO COMMUNICATIONS

**a.** When a flight service station receives the prejump radio call required by FAR 105.14, contact the ARTCC sector or terminal facility in whose airspace the jump begins. If the controller has pertinent traffic, advise the jump aircraft to contact the control facility on the appropriate frequency for traffic information.

**b.** If the aircraft is unable to contact the control facility direct, obtain traffic information and relay it to the aircraft.

**Example. —**

"Cessna Four Zero Yankee, ATC advises traffic is a Cessna Four Twenty-one passing the Sputs Intersection eastbound on Victor One Fifty-seven at seven thousand."

## 6-82. thru 6-89. RESERVED

# Chapter 7. INTERNATIONAL OPERATIONS

## Section 1. GENERAL

### 7-1. BASIC PROCEDURES

**a.** Instructions in this chapter apply to IFSS's, ARTCC's, FSS's and Kansas City (KMKM) IATSC's. All personnel who are required to handle international messages shall be familiar with and use those ICAO documents containing instructions for preparing and handling communications for the AFTN circuits. These basic international telecommunications instructions are found in "International Standards and Recommended Practices" ICAO Annex 10 — Aeronautical Telecommunications, Volume II and Document 7946, Manual of Teletypewriter Operating Practices. DOC 4444-RAC 501, Rules of the Air and Air Traffic Services list the various Air Traffic Service movement messages. Location indicators are contained in ICAO Document 7910, and Designators for Aircraft Operating Agencies Aeronautical Authorities and Services are contained in ICAO DOC 8585. FAA policies concerning acceptance of message for international transmission are contained in FAR Part 189. These documents and amendment services should be retained at FAA facilities which handle international messages. FAA personnel shall not act as agents for any aircraft operating or dispatching company.

**b.** Use the ICAO message envelope specified in handbook 7110.80, when transmitting messages to Canada or Mexico via Service B/AFTN.

1. Use a six character addressee indicator; the first four characters are the ICAO location indicator and the last two characters designate the facility type responsible for flight planning at that location.

(a) Six character Canadian relay facilities are listed in Handbook 7350.5. Use "YF" as the last two characters for Mexico.

**c.** Do not accept "assumed departure" flight plans when the destination is in a foreign country.

**d.** For Search and Rescue purposes, request pilots filing VFR flight plans to notify the FSS nearest the border crossing point of the border crossing time. (Ref. paragraph8-41)

### 7-2. ADHERENCE TO ICAO STANDARDS

Automation of the AFTN requires precise adherence to the ICAO standards. It is imperative that all offices or facilities, originally preparing (perforating) message tapes, produce these tapes error-free, particularly those components containing the various functional elements such as start of message, alignment-functions, heading line, address line, end-of-message.

### 7-3. ICAO—TELETYPEWRITER—MESSAGE—FORMAT

**a.** ICAO teletypewriter message format is illustrated in detail in Annex 10, Volume II. Those facilities directly connected to KMKM, on AFTN channels (New York WSO, Miami IFSS, etc.) use standard ICAO procedures with KMKM. All other facilities on the Service B networks that do not have a direct AFTN connection to KMKM, shall enclose the ICAO message within a standard Service B envelope as outlined in paragraph7-3b.

**b.** International messages *(Alaska — Not Applicable)* will generally be introduced into the system by facilities on Service B originating messages requiring relay to the AFTN circuits or by the Kansas City IATSC in the relay of ICAO traffic from the AFTN to the domestic B system. Handle these messages as follows:

1. International messages originated by a facility on Service B for relay to AFTN via Kansas City IATSC.

(a) Start of message (SOM) code (<<≡).

(b) Preamble (originator, space, priority, space, addressee(s) ).

(i) Originator — three character domestic identifier.

(ii) Priority — two character precedence field.

(iii) Addressee(s) — not to exceed sixty-nine characters, or nine addressees. Each addressee separated by a space.

(c) End of Line (EOL) (same as Start of Message code).

(d) End of Text (EOT)/End of Message (EOM) (<<6≡NNNN).

**Example. —**

<<≡DCA FF MTPPZT MKJFZR MBZLZR<<≡
text<<6≡NNNN

**2.** Messages originated by a facility on Service B which are forwarded to a gateway facility to determine correct address.

**Example. —**

<<≡ICT FF MIA (as applicable)<<≡
MIA T MTPP<<≡
(text)<<6≡NNNN

**3.** Automatic relay from international AFTN circuits to Area B by the BDIS computer.

**Example. —**

<<∨ALB<<≡
FF KALBYF<<≡

241545 CYULYF<<≡
text<<6≡NNNN

**Note 1. —** Messages relayed through the Kansas City computer are condition coded to the appropriate facility on Service B but no domestic heading is provided. Facilities receiving these messages must check the address line and forward the communication to the appropriate offices.

**Note 2. —** For combined domestic and international delivery, see handbook 7110.80, paragraph 144.

## 7-4. CODE ASSIGNMENTS

The ICAO location identifier KMKM is assigned to the Kansas City IATSC. All facilities directly connected to KMKM have discrete transmission identification letter assignments.

## 7-5. CIRCUITRY

All AFTN circuits are connected to the Kansas City IATSC. KMKM is the only interface between Area B, Supplemental B, and the AFTN, including Center B.

## 7-6. ARTCC RELAY OF VFR MESSAGES

ARTCC teletype operators shall relay all international VFR flight movement messages to the adjacent FSS/IFSS, unless the FSS is also an addressee.

**Note. —** If an overseas unit erroneously routes a VFR movement message to an ARTCC, the automatic AFTN switch will not divert it to an FSS or IFSS.

## 7-7. thru 7-19. RESERVED

## Section 2. CANADIAN MOVEMENT AND CONTROL MESSAGES

### 7-20. FLIGHT PLAN/CUSTOMS REQUIREMENTS

Specific flight plan, Customs and other requirements of individual countries are listed in the FAA International Flight Information Manual (IFIM).

### 7-21. RECORDING TIME FILED

Record on the flight plan form the time that a flight plan is filed. This time will constitute evidence of the pilot's intention to comply with Customs, Immigration, and Public Health requirements and will be made available upon request from these authorities.

### 7-22. AIR-FILED FLIGHT PLANS

Accept air-filed flight plans or changes in destination information from aircraft inbound from foreign locations and, if requested by the pilot, enter Customs notification service.

### 7-23. FLIGHT PLAN CHANGES AND CANCELLATIONS

**a.** Assume departure station duties when a flight plan change is received from an aircraft en route to Canada or Mexico. (Ref. paragraph6-25/6-26)

**b.** An FSS receiving a VFR flight plan cancellation report from aircraft operating to Canada or Mexico shall transmit a cancellation message to the Canadian or Mexican tie-in facility (Ref. paragraph6-27b.).

### 7-24. INBOUNDS FROM CANADA/MEXICO

**a.** Acknowledge receipt of flight notification message as soon as practicable by transmitting the contraction "ACP" (Canada) and the full aircraft identification, e.g., "ACP N711VR."

**b.** When Customs flight notification service is requested, as indicated by inclusion of "ADCUS" in remarks, deliver the complete message to the associated Customs office as soon as practicable.

1. Provide the service only for those airports where availability is advertised in the Airport/Facility Directory. The pilot is responsible for making his own Customs arrangements for other airports.

2. Notify only the Customs office which, in turn, is responsible for notifying other inspection agencies concerned.

**c.** Suspense VFR messages until arrival or closure information is received. File IFR messages after delivery to Customs.

### 7-25. OUTBOUNDS TO CANADA

**a.** Accept flight plans only for aircraft proposing flight to a designated airport of entry.

**b.** Accept Customs notification requests for relay via flight plan only for airports of entry where Customs flight notification service is provided and when proposed ETA is during Customs service hours.

**c.** Upon notification of departure of VFR flights or IFR flights requesting customs notification, transmit a flight notification message directly to the destination Canadian relay facility.

1. Address VFR messages to the destination relay facility listed in 7350.5, Location Identifiers.

2. Address IFR messages to the associated ACC. (CZ-ZF)

3. When available, use interphone or telephone for flights of 30 minutes or less.

**d.** Refer to the Canada and North Atlantic IFR and VFR supplements to determine Customs hours of service, availability of Customs flight notification service (ADCUS), and relay facility for infrequently used Airports of Entry not listed in the Location Identifier handbook 7350.5.

**e.** Transmit flight notification messages in the following format:

1. Type of flight plan.
2. Aircraft identification.
3. Aircraft type.
4. Departure point (three letters).
5. Destination (three letters).
6. ETA.
7. Remarks:

(a) ADCUS and number of persons aboard (only if Customs notification is requested and available).

(b) FP and location identifier of FSS holding original flight plan (if applicable).

**Example. —**

BUF FF CZYZZF

VFR N711VR C182 BUF YYZ 1735 ADCUS 2

NNNN

**f.** Suspense VFR messages until acknowledgment is received (Ref. paragraph8-41).

**Note.—** Canada routinely acknowledges all VFR flight notification messages. Do not expect acknowledgment for IFR flight notification messages.

1. If acknowledgment is not received within 30 minutes after departure, transmit the contraction "REQ ACP" (request acceptance) and the complete aircraft identification.

**Example. —**

BUF FF CZYZZF

REQ ACP N711VR

NNNN

2. If acknowledgment is not received within one hour after departure, use interphone or telephone to deliver. In any event, assure delivery prior to ETA.

3. Refer to Section A of the Canada and North Atlantic IFR Supplements for Canadian FSS and ACC telephone numbers.

**g.** When correcting or revising a message, retransmit the complete message preceded by the contraction "CHG" (change).

**Example. —**

BUF FF CZYZZF

CHG VFR N711VR C182 BUF YYZ 1845 ADCUS4

NNNN

**h.** Do not transmit IFR flight notification messages except for military aircraft or customs notification purposes.

## 7-26. OUTBOUNDS TO CANADA DEPARTING FROM OUTSIDE FLIGHT PLAN AREA

**a.** Accept flight plans regardless of departure point. Forward flight plan information for aircraft proposing to depart from outside the facility's flight plan area to the tie-in FSS for the departure point.

1. Identify the tie-in FSS and advise the pilot to report departure time directly to that facility.

**Note.—** While the report may be relayed through another facility, it is pilot responsibility to notify the tie-in FSS of departure time.

2. Upon receipt of the departure report, the tie-in FSS is responsible for delivery of the flight notification message to Canada.

3. If a departure report has not been received within one hour of the proposed departure time, cancel and file the proposed flight plan.

**b.** Forward VFR proposals to the tie-in FSS in the following format:

1. Aircraft identification.
2. Aircraft type.
3. Departure point.
4. Destination.
5. Proposed departure time/ETE.
6. Remarks.

**Example. —**

CLE FF BUF

N711VR C182 BUF YYZ P1630/0030 ADCUS 2

NNNN

**c.** Forward IFR proposals as follows:

1. If Customs flight notification service (ADCUS) is requested and available, include the tie-in FSS as an addressee on the proposal message transmitted to the ARTCC.

(a) Include ADCUS information as an intrafacility remark on the proposal message.

**Note.—** Enter ARTCC computer address last (Reference 6-12a(5)).

**Example. —**

DCA FF AGC ZCC

DCA2010001 FP N1234P PA28/A 150 PIT P0200 150 PIT CIP DKK BUF YYZ/0130 ADCUS 4

NNNN

2. If Customs notification is not requested, file the flight plan after transmission to the ARTCC.

**d.** Tie-in FSS acknowledgment is required for both VFR and IFR proposals.

## 7-27. IFR FLIGHT PLANS DEPARTING FROM CANADIAN AIRPORTS

**a.** Accept IFR flight plans departing from Canadian airports and destined to the U.S.

1. Transmit a proposal message in ARTCC 9020 computer format (Ref. **paragraph** 6-12c and 5-14) to the associated Canadian ACC. The address consists of the ACC two-letter location identifier listed in 7350.5, Location Identifiers, prefixed by "CZ" and suffixed by "ZQ" (CZ. .ZQ).

2. If Customs flight notification service is requested and available, include "ADCUS," pilot's name, and number of persons on board with a notation of the number of non-U.S. citizens as an intrafacility remark.

**Note. —** When ADCUS information is included, Canada will transmit an IFR flight notification message to the appropriate U.S. FSS upon aircraft departure.

**Example. —**

BUF FF CZYZZQ

BUF1435009 FP N1234 CV58/D 280 YYZ P1800 100 YYZ V3 4ROC/0030 ADCUS 5 BILL JONES 2 NON

NNNN

**b.** Canada does not acknowledge for proposal messages. Do not expect or request acknowledgment.

## 7-28. thru 7-39. RESERVED

## Section 3. MEXICAN MOVEMENT AND CONTROL MESSAGES

### 7-40. INBOUNDS FROM CANADA/MEXICO

**a.** Acknowledge receipt of flight notification message as soon as practicable by transmitting the contraction "RFP" (Mexico) and the full aircraft identification, e.g., "RFP N1234X."

**b.** When Customs flight notification service is requested, as indicated by inclusion of "ADMISA" in remarks, deliver the complete message to the associated Customs office as soon as practicable.

1. Provide the service only for those airports where availability is advertised in the Airport/Facility Directory. The pilot is responsible for making his own Customs arrangements for other airports.

2. Notify only the Customs office which, in turn, is responsible for notifying other inspection agencies concerned.

**c.** Suspense VFR messages until arrival or closure information is received. File IFR messages after delivery to Customs.

### 7-41. FLIGHT PLAN/CUSTOMS REQUIREMENTS

Specific flight plan, Customs and other requirements of individual countries are listed in the FAA International Flight Information Manual (IFIM).

### 7-42. RECORDING TIME FILED

Record on the flight plan form the time that a flight plan is filed. This time will constitute evidence of the pilot's intention to comply with Customs, Immigration, and Public Health requirements and will be made available upon request from these authorities.

### 7-43. AIR-FILED FLIGHT PLANS

Accept air-filed flight plans or changes in destination information from aircraft inbound from foreign locations and, if requested by the pilot, enter Customs notification service.

### 7-44. FLIGHT PLAN CHANGES AND CANCELLATIONS

**a.** Assume departure station duties when a flight plan change is received from an aircraft en route to Mexico (Ref. paragraph6-25/6-26.)

**b.** An FSS receiving a VFR flight plan cancellation report from aircraft operating to Mexico shall transmit a cancellation message to the Canadian or Mexican tie-in facility (Ref. paragraph6-27b.).

### 7-45. MOVEMENT MESSAGES FROM UNITED STATES TO MEXICO

**a.** Mexico requires notification of an inbound aircraft before its arrival. Transmittal of a flight notification message with "ADMISA" (Advise Customs and Public Health Services) in remarks is one method of satisfying this requirement. When the ETE is less than one hour, the pilot should also notify Mexican officials directly.

**b.** Inform pilots (other than FAA flight inspection pilots) who file flight plans to Mexican destinations other than Airports of Entry that:

1. Prior approval to land at a non-Airport of Entry is required by Mexican law.

2. A flight notification message will not be transmitted to the destination airport, but only to Mexico City. Therefore, the flight plan will not be used for Customs nor search and rescue notification.

**Note. —** FAR 91.84 requires flight plans for all aircraft operating between the United States and Mexico. When the destination is other than an Airport of Entry, the pilot makes his own arrangements with Mexican officials.

**c.** Flight Plan messages of inbound aircraft to Mexico shall be handled as follows:

1. VFR flight plans shall be transmitted via the AFTN (Aeronautical Fixed Telecommunication Network) to the destination airport, and to the regional flight dispatch office for relay to destination (see Table 1). Border facilitie that have interphone/telephone capability between the U.S. and Mexican border airports shall retain the option to relay by interphone/telephone the required flight plan information to the destination station only.

2. The routing and addressing of a particular flight notification message shall be determined by referring to the listing in the Mexican section of the location identifier manual (7350.5). When addressing flight notification movement messages to Mexico both regional dispatch office and destination airports shall be addressed. Some locations operate on a part-time basis and others hours of operation are subject to change without notice. The appropriate flight dispatch office will assume the responsibility for flight notification messages when the destination facility is not operational.

3. Table 1.

### Responsible Regional Flight Dispatch Offices

| Destination Airport | Dispatch Office |
|---|---|
| Acapulco (MMAA) | Mexico City |
| Cancun (MMUN) | Merida |
| Chetumal (MMCM) | Merida |
| Chihuahua (MMCU) | Monterrey |
| Ciudad Juarez (MMCS) | Monterrey |
| Cozumel (MMCZ) | Merida |
| Cuidad Acuna (MMCC) | Monterrey |
| Guadalajara (MMGL) | Mexico City |
| Guaymas (MMGM) | Mazatlan |
| Hermosilla (MMHO) | Mazatlan |
| LaPaz (MMLP) | Mazatlan |
| Loreto (MMLT) | Mazatlan |
| Manzanillo (MMZO) | Mexico City |
| Matamores (MMMA) | Monterrey |
| Mazatlan (MMZT) | Mazatlan |
| Merida (MMID) | Merida |
| Mexicali (MMML) | Mazatlan |
| Mexico City (MMMX) | Mexico City |
| Monterrey | |
| Mariano Escobedo (MMMY) | Monterrey |
| Del Norte (MMAN) | Monterrey |
| Nogales (MMNG) | Mazatlan |
| Nuevo Laredo (MMAN) | Monterrey |
| Piedras Negras (MMPG) | Monterrey |
| Puerto Vallarta (MMPR) | Mazatlan |
| Reynosa (MMRX) | Monterrey |
| San Jose Del Cabo (MMSD) | Mazatlan |
| Tampico (MMTM) | Mexico City |
| Tapachula (MMTP) | Merida |
| Tijuana (MMTJ) | Mazatlan |
| Torreon (MMTC) | Monterrey |
| Vera Cruz (MMVR) | Mexico City |
| Ixtapa Zihuatanejo (MMZH) | Mexico City |

**d.** A VFR flight and customs notification message shall consist of the following items:

1. Aircraft identification.
2. Aircraft type.
3. Departure time.
4. Departure point.
5. Destination.
6. ETE.
7. Remarks:

(a) ADMISA, number of persons aboard and pilot's name (if customs notification requested).

(b) REQ ACK.

**e.** Upon receipt of a flight notification message that was transmitted via AFTN, the destination station in Mexico shall send an acknowledgment message to the departure station in the United States.

**f.** If the departure station does not receive an acknowledgment within 30 minutes of the time of transmission of the flight notification message, it shall be retransmitted to the destination station and to the Flight Dispatch Office (OW) at the corresponding Regional Headquarters, Mexico (MMMXXMOW), Monterrey Mazatlan (MMMYXMOW), Merida (MMMDXMOW) or Mazatlan (MMMZXMOW). The Flight Dispatch Office involved will then send an acknowledgment to the departure station and assume responsibility for the flight notification message.

**g.** When an acknowledgment has not been received within two hours of the aircraft's ETA the tie-in FSS shall make inquiries to the Mexican destination station and to the Flight Dispatch Office at the Regional Headquarters. If the inquiry cannot be made during the hours of operation of the destination station, it will be delayed until the facility reopens. If no reply is received within one hour after the inquiry is transmitted, or if the reply is negative, a QALQ message will be transmitted to the departure station and to stations along the route within the United States.

**h.** MMMXXMOW will be responsible for handling INCERFA, ALERFA and DETRESFA messages on aircraft from the U.S. inbound to Mexico.

## 7-46. MOVEMENT MESSAGES FROM MEXICO TO THE UNITED STATES

**a.** Upon receipt of a flight notification message that was received via AFTN, the destination station in the United States will send an acknowledgment message to the departure station in Mexico and to the Flight Dispatch Office at the Regional Headquarters.

**b.** The Departure station in Mexico is responsible for initiating any necessary SAR action until an acknowledgment of the flight notification message is received.

## 7-47. ROUND ROBIN FLIGHT TO MEXICO

In addition to accepting and transmitting a flight notification message to a Mexican Airport of Entry, accept a round robin flight plan for a stopover flight from your location to Mexico to your location. Emphasize to the pilot that he must close or have another FSS relay any change or closure of his round robin flight plan. Accept round robin flight plans when the stopover point is not an "airport of entry," but transmit the flight notification message only to Mexico City. Exception: Do not transmit a flight notification message for those round robin flights that are known to possess authorization to commute to "non-airports of entry"; e.g., pilot lives in the U.S. but flies to business location in Mexico. (Reference: paragraph6-1.)

## 7-48. NOTICE OF INTENDED ARRIVAL ALONG U.S./MEXICO BORDER, THE GULF OF MEXICO, AND THE ATLANTIC COAST

**a.** Customs regulations require private aircraft arriving in the U.S. via U.S./Mexican Border, the Gulf of Mexico and the Atlantic Coast South of 31° North latitude must furnish a notice of intended arrival to Customs. This notice may be made anytime an aircraft is within the ADIZ but must be made at least 15 minutes prior to crossing the U.S. Coastline/Border. These aircraft are required to land at the designated airport nearest the crossing point.

**Note. —** The FAA role in this program is advisory only. Any appearance of action of enforcing compliance shall be avoided. Any questions should be directed to the U.S. Customs Service.

**Reference. —** 19 CFR, Part 6, Section 6.14 and 14 CFR Part 99.1, and 99.11.

**b.** FSS specialists shall apply the following procedures in dealing with these flights.

1. Upon initial receipt of a notice of intended arrival from an aircraft arriving in the U.S. from Mexico, the Gulf of Mexico and the Atlantic Coast South of 31° North latitude FSS facilities shall pass the data to their associated Customs Office.

2. When an airborne aircraft identifies an airport of first intended landing that is not one of the designated airports listed below, the FSS shall advise the pilot that this airport of intended landing is not a designated airport nearest the point of crossing the U.S. Border Coastline.

*Phraseology:*

BE ADVISED THAT YOUR DESTINATION IS NOT A U.S. CUSTOMS DESIGNATED FIRST LANDING AIRPORT.

3. When a flight plan or flight notification message from any source affected by these procedures contains ADCUS and identifies an airport of first intended landing that is not a designated airport, the FSS shall notify the message originator to advise the pilot that the filed destination is not a designated airport.

**c.** The following are designated airports of first intended landing:

Beaumont, Texas—Jefferson County Arpt.;
Brownsville, Texas—Brownsville Intl. Arpt.;
Calexico, California—Calexico Intl. Arpt.;
Corpus Christi, Texas—Corpus Christi Intl. Arpt.;
Del Rio, Texas—Del Rio Intl. Arpt.;
Douglas, Arizona—Bisbee Douglas Intl. Arpt.;
Eagle Pass, Texas—Eagle Pass Arpt.;
El Paso, Texas—El Paso Intl. Arpt.;
Fort Lauderdale, Florida—Fort Lauderdale Intl. Arpt.;
Fort Lauderdale, Florida—Fort Lauderdale Exec. Arpt.;
Fort Pierce, Florida—St. Lucie Co, Intl. Arpt.;
Houston, Texas—Hobby Arpt.;
Key West, Florida—Key West Arpt.;
Laredo, Texas—Laredo Intl. Arpt.;
McAllen, Texas—Miller Intl. Arpt.;
Miami, Florida—Miami Intl. Arpt.;
Miami, Florida—OPA-Locka Arpt.;
New Orleans, Louisiana—Moisant Arpt.;
Nogales, Arizona—Nogales Intl. Arpt.;
Presido, Texas—Presido-Lely Intl. Arpt.;
San Diego, California—Brown Field;
San Diego, California—San Diego Intl. Arpt.;
(Lindbergh Field);
Tampa, Florida—Tampa Intl. Arpt.;
Tucson, Arizona—Tucson Intl. Arpt.;
West Palm Beach, Florida—West Palm Beach Arpt.;
Yuma, Arizona—Yuma Intl. Arpt.

## 7-49. thru 7-59. RESERVED

## Section 4. ICAO MOVEMENT AND CONTROL MESSAGES

### 7-60. TRANSMISSION VIA AREA B

**a.** International messages *(Alaska — Not Applicable)* will generally be introduced into the system by facilities on Service B originating messages requiring relay to the AFTN circuits or by the Kansas City IATSC in the relay of ICAO traffic from the AFTN to the domestic B system. Handle these messages as follows:

**1.** International messages originated by a facility on Service B for relay to AFTN via Kansas City IATSC.

(a) Start of message (SOM) code (<<≡).

(b) Preamble (originator, space, priority, space, addressee(s) ).

(i) Originator — three character domestic identifier.

(ii) Priority — two character precedence field.

(iii) Addressee(s) — not to exceed sixty-nine characters, or nine addressees. Each addressee separated by a space.

(c) End of Line (EOL) (same as Start of Message code).

(d) End of Text (EOT)/End of Message (EOM)(<<6≡NNNN).

**Example. —**

<<≡DCA FF MTPPZT MKJFZR MBZLZR<<≡

text<<6≡NNNN

**2.** Messages originated by a facility on Service B which are forwarded to a gateway facility to determine correct address.

**Example. —**

<<≡ICT FF MIA (as applicable)<<≡

MIA T MTPP<<≡

(text)<<6≡NNNN

**3.** Automatic relay from international AFTN circuits to Area B by the BDIS computer.

**Example. —**

<<∨ALB<<≡

FF KALBYF<<≡

241545CYULYF<<≡

text<<6≡ NNNN

**Note 1. —** Messages relayed through the Kansas City computer are condition coded to the appropriate facility on Service B but no domestic heading is provided. Facilities receiving these messages must check the address line and forward the communication to the appropriate offices.

**Note 2. —** For combined domestic and international delivery, see 7110.80 paragraph 2-38.

### 7-61. ORIGINATING AND ADDRESSING OF MESSAGES

**a.** Messages for ATS purposes may be originated with ATS units by aircraft in flight, or, through local arrangements, a pilot, the operator, or his designated representative.

**b.** Aircraft movement, control, and flight information messages for purposes other than ATS; e.g., operational control, shall be originated by the pilot, the operator, or his designated representative.

**c.** The aircraft operating agency or serving company flight planning office is responsible for correct formatting and addressing of all FPLs when the information is by direct input to the AFTN. When FPLs are filed through ATS units, aircraft operating agencies or serving companies are responsible for providing all required information and identifying ATS units will be responsible for formatting and message transmission.

**d.** Address IFR FPL messages to the ARTCC serving the airport of departure and to all ATS units (including oceanic) providing air traffic control service or concerned with flight along part or the whole of the route to be flown except FAA ATCTs and other conterminous U.S. ARTCCs. If more than one message is necessary to accomplish distribution, the ARTCC serving the airport of departure must be addressed in each message.

**Note. —** Within the NAT Region, FPLs on turbojet aircraft transiting the control areas of Gander Oceanic, New York Oceanic, Reykjavik, Santa Maria Oceanic, Shanwick Oceanic and /Sondrestrom (south of 70 degrees) within 90 nautical miles of the control area boundary, shall be addressed to the adjacent ACC to provide lateral separation. For all other aircraft, a 120 nautical mile proximity limit shall apply.

**e.** Transmit all IFR FPLs to ARTCCs not less than one hour prior to the proposed departure time. Do not hold FPLs until after departure time and transmit as a combined FPL and DEP. Separate FPL and DEP messages must be transmitted.

**f.** Address aircraft movement messages only to those ATS units responsible for the provision of relevant service, except that when so requested by the operator concerned, these messages, when transmitted via the AFTN, may also be routed, as specified by the operator or his representative to:

1. One addressee at the point of intended landing or point of departure; and

2. Not more than two operational control units concerned.

**g.** The ARTCC serving the departure airport shall transmit the departure message (DEP) on IFR aircraft to all known recipients of the FPL message. Flights between conterminous U.S. and Canada (excluding Gander Oceanic), Alaska, Hawaii and Puerto Rico do not require DEP messages. Discontinuance of DEP messages affecting the route of flight can only be accomplished by ICAO Regional Air Navigation Agreement.

## 7-62. CATEGORIES OF MESSAGES

The following ATS messages, with their normal priority indicators, are authorized for transmission by any means; i.e., AFTN, Service B, interphone, computer-to-computer, or via the aeronautical mobile service, as applicable.

**a.** Emergency messages comprising:

1. Distress messages and distress traffic, including alerting (ALR) messages relating to distress (DETRESFA) phase; SS.

2. Urgency messages, including alerting messages relating to an alert (ALERFA) phase, or to an uncertainty (INCERFA) phase; SS.

3. Other messages concerning known or suspected emergencies which do not fall under 1 and 2 above, and radio communications failure (RCF) messages; FF or higher as required.

**b.** Movement and control messages comprising:

1. Flight plan (FPL); FF.
2. Amendment and coordination messages:
    (a) Departure (DEP); FF.
    (b) Delay (DLA); GG.
    (c) Arrival (ARR); GG.
    (d) Boundary estimate (EST); FF*
    (e) Modification (CHG); FF*
    (f) Coordination (CDN); FF*
    (g) Acceptance (ACP); FF.*
3. Cancellation (CNL); GG.*
4. Clearances, flow control (SPL, CHG, CDN); FF or DD.*
5. Transfer of control (TCX); FF.*
6. Requests (RQS); FF.*
7. Position reports (AIREP); FF.*

**c.** Flight information messages comprising:

1. Traffic information; FF.*
2. Meteorological information (MET); FF, GG.
3. Operation of aeronautical facilities and essential airport information (NOTAM); GG.

*Normally exchanged between ATC units via speech circuits.

**d.** Technical messages. Four categories of these messages are specified for use on computer-to-computer circuits only. They will not be sent on AFTN or Service B circuits.

## 7-63. MESSAGE PRECEDENCE

**a.** These messages concern the safety of a ship, aircraft or other vehicles or of some person on board or within sight.

**1.** The originator of an SS message shall use the priority alarm signal following the originator indicator.

**Example. —**

```
SS KZOAZR <<≡

210754 PHZHZR ∧JJJJJSSSSS ∨<<≡

(text)<<6≡NNNN
```

**2.** The AFTN destination station shall acknowledge immediately to the originating stations. The acknowledgment shall be a complete message using the priority alarm signal.

**Example. —**

```
SS PHZHZR<<≡

210756 KZOAZR∧JJJJJSSSSS∨<<≡

R 210754 PHZHZR<<6≡NNNN
```

**3.** Facilities receiving via service B for themselves or a facility they guard for, shall acknowledge in the same manner as subparagraph b, above.

**b.** When justified by the requirements for special handling, the precedence DD may be assigned in place of the normal precedence. Messages should be assigned a lower precedence if this lower precedence will serve the intended purpose.

## 7-64. SERVICE MESSAGES

**a.** Kansas City IATSC (KMKM) will immediately generate a service message to an originator when incorrect code or routing indicators are detected in the message address.

**Example. —**

```
FF KZKCZQ
031840 KMKMYT
SVC. ZKC121 QTA RPT
NNNN
```

**Example. —**

```
FF KZKCZQ
031840 KMKMYT
SVC. ZKC122 QTA MSR
NNNN
```

**Note. —** Automatic Service Messages to Center B subscribers only.

**b.** Assign the appropriate priority indicator to international service messages. When service messages refer to messages previously transmitted, assign the same priority prefix. Identify a service message by inserting "SVC" as the first item of the text.

**Example. —**

<<≡SEA FF MJSJYF<<≡
SVC.RUMES 231015 etc.
<<6≡NNNN

## 7-65. FLIGHT PLAN FORMS AND INSTRUCTIONS

**a.** Use the International Flight Plan, FAA Form 7233-4 (See Appendix-7110.10), or ICAO Model Flight Plan Form displayed in DOC 4444, and apply the procedures set forth in this section for flight:

**1.** Originating within conterminous U.S. and Canada and destined non-stop to points beyond those areas.

**2.** Originating within or transiting Pacific Flight Information Regions (FIRs) and destined to or from FIRs beyond the Pacific Region, including the NAM Region.

**Note 1.—** The NAM Region encompasses the conterminous U.S., Alaska and Canada to the North Pole.

**Note 2.—** FAA Form 7233-1, 7233-3, or Military Form DD-175, and domestic procedures are used for flights in the conterminous U.S., Canada, and the Honolulu Alaskan and San Juan domestic control areas.

**b.** Complete the shaded areas of the first two lines of the flight plan form when it is handed in or filed. Fill in the specific addressees and originator identification only as required. Symbols on the form are to facilitate teletypewriter transmission and are described as follows:

**1.** Alignment function — 2 carriage returns and one line feed.

**2.** Start-of-ATS-data signal-upper case K (←). (Corresponds to International Telegraph Alphabet (ITA) No. 2, signal No. 11, open parenthesis "(.") (See **Appendix** E)

**3.** Start-of-field signal upper case A ( ↑ ).* (Corresponds to ITA No. 2, signal No. 1, single hyphen (-).)

**4.** Small letter "s"—indicates space.

**5.** End-of-ATS-data signal-upper case L (↖). (Corresponds to ITA No. 2, Signal No. 12, closed parenthesis")".")

***Note. —** This symbol is indicated by a vertical half space line on Form 7233-4.

## 7-66. AIR TRAFFIC SERVICE (ATS) MESSAGES

ATS as used in this section, as opposed to the meaning of the term within the FAA, is a generic term meaning, and including: Flight information; alerting; air traffic advisory; and air traffic control (ATC) services. "ATC" includes Air Traffic Control Center (ARTCC), Area Control Center (ACC), Approach Control (AC), and/or Airport Control Tower (APCT/TWR).

## 7-67. TRANSMISSION OF ATS MESSAGES

**a.** Air traffic service messages are interchanged in the international air traffic control system in the following modes:

**1.** The preferred "step-by-step" mode, wherein each ACC/ARTCC sends forward, as the flight progresses, full current (updated) flight plan information.

**2.** The "simultaneous" mode, wherein information extracted from the filed flight plan (FPL) is sent simultaneously to all ATS units along the route of flight; in this mode, only amendments to the FPL, plus necessary control information, are forwarded from center to center as the flight progresses.

**b.** Prepare and transmit ATS messages as set forth in Section 2 of this handbook. Address these messages as follows:

**1.** Include one 6 or 8 character addressee indicator for each addressee. There can be no more than one line (69 characters including separating spaces) of addressees. When more than the allowable number of addressees are required, two or more transmissions of the message, each with no more than the allowable number of addresses, must be made. The 6 or 8 letter combination addressee indicators are composed as follows:

(a) The four-letter ICAO location indicator; e.g., MBLB. Use only those listed in ICAO DOC 7910 (Location Indicators). Do not use international location identifiers from the list in FAA Handbook 7350.5.

(b) A 2-letter designator for the authority, service or operator, or if no designator has been assigned, afix "YX" for military, "ZZ" for aircraft in flight, or "YY" for all other cases; e.g., MTPPYY. (Ref ICAO DOC 8505, Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services)

**Note. —** The most frequently used and authorized designators are:

YA — Government Civil Aviation Authority(FAA)
YC — Rescue Coordination Center (RCC)
YD — Authority Supervising the Aerodrome
YF — Aeronautical Fixed Station (FSS/IFSS/IATSC)
YM — Meteorological Office (NWS)
YN — International NOTAM Office (NOF)
YT — Telecommunications Authority

YW — Military Flight Operational Control Center (ACP)

YX — Military Organization (BASOPS)

YY — Organization not allocated a 2 — letter designator

ZF — Center in charge of a FIR/UIR when the message is relevant to a VFR flight (AMIS)

ZO — Oceanic Air Traffic Control Center

ZP — Air Traffic Service Reporting Office

ZQ — Computer Facility at ACC/ARTCC

ZR — ACC/ARTCC

ZT — Aerodrome Control Tower

ZZ — Aircraft in flight

(c) A 2-letter designator may appear following an air carrier designator to indicate the department or division of the organization addressed.

**2.** Filing time. A 6-digit date/time group indicating the time the message is filed with the FSS/IFSS for transmission.

**c.** Originator indicator. Consists of a 6- or 8-letter sequence similar to an Address Indicator, identifying the place of origin and the organization originating the message.

**d.** Supplementary address and origin information. When the 2-letter designators "YX" "ZZ," or "YY" are used, identify the aircraft operator or organization at the beginning of the text preceding the start-of-ATS data symbol (←), in the same order as in the addressee(s) and/or originator indicator(s). Where there is more than one such insertion, the last should be followed by the word "stop." Where there are one or more insertions in respect of Addressee Indicators plus an insertion in respect of the Originator Indicator, the word "FROM" is to appear before that relating to the originator.

**e.** When addressing Flight Plan Messages, Amendment Messages relating thereto and Flight Plan cancellation messages to centers use one of the 2- letter designators as follows:

1. If message is relevant to IFR and:

(a) The center is computer equipped (U.S. ARTCCs) use ZQ.

(b) The center is not computer equipped, use ZR.

(c) Relevant to oceanic operations, use ZO.

**Note.—** Some centers may request specific addressing different from above. ZT and ZP are used internationally but are not used in internal U.S. application.

2. If message is VFR (AMIS), use ZF.

3. If SVC or administrative, use ZR.

## 7-68. ICAO ATS MESSAGES FORMAT

The following are examples of ICAO message types most likely to appear on AFTN/Area B circuits. The number above the data corresponds to the field type numbers on the flight plan form (FAA Form 7233-4) and on the chart of "Standard ATS Messages and Their Composition (7110.80 **Appendix B**)." Symbols used in the examples are those shown on the keyboard and printed on the printer of FAA weather type teletypewriters. When using communications type teletypewriters the keyboard and printed copy display the symbols expressed as ITA No. 2 signal in paragraph 7-65 and shown in **Appendix E**.

**a.** Departure Message (DEP). ARTCCs are the designated ATS unit responsible for originating and transmitting DEP messages on all IFR aircraft departing airports within their center boundaries. IFR flight plans must be transmitted to ARTCCs at least one hour before departure. This allows ARTCCs to determine recepients of DEP message when domestic portions are transmitted to ARTCCs in model 3 format. Do not hold FPLs and combine with DEP into a single message.

Example—Departure message containing actual departure times:

```
FF>MDSZQ> MACCZQ<<≡
041703>KZNYZR<<≡
   1       6       12
←DEP↑SAM236↑1706↖V<<6≡
NNNN
```

**b.** Delay Message (DLA). Transmitted when departure of an aircraft, for which an FPL message has been transmitted, is postponed or delayed more than 30 minutes after the estimated time of departure contained in the FPL.

Example—Delay message containing new ETD:

```
FF>MDSDZQ>MACCZQ<<≡
101730>KZNYZR<<≡
   1       6       12
←DLA↑SAM236↑1800↖V<<6≡
NNNN
```

**c.** Alerting Message (ALR). Relating to an overdue situation on an aircraft.

Example—Uncertainty phase message:

```
   1          5
←ALR↑INCERFA/KZNYZR/OVERDUE<<≡
   9          10
↑SAM236↑R/R/J<<≡
↑(information from Field 13, 15, and 17)<<≡
                                   18
↑REG/A43216 OPR/USAF RMK/NO PSNRP SINCE
DEP PS 12 MINS<<≡
```

19

↑FUEL/1030 POB/12 RDO/121.5 243.0 JACKETS LIGHT FLOURESCEIN DINGHIES ORANGE 02 014<<≡

20

↑BAKER USAF DKOVZV 1705 324.5 PILOT REPORTED OVER SIE SILVER AND WHITE US ATS AND SAR UNITS ALERTED NIL↖↓<<6≡

NNNN

**d.** Supplementary Flight Plan (SPL) information shall be sent to ATS units requesting the information (RQS).

Example—SPL message:

1 6

←SPL↑SAM236<<≡

↑MACC2056>MACA<<≡

↑(Same as fields 18 through 20 paragraph c. above)

↖↓<<6≡

NNNN

**e.** Arrival Message (ARR). Sent only on Canadian MOT, U.S. DOT or FAA aircraft, or upon request.

Example—ARR message (aircraft landed at alternate aerodrome)

1 6 17

←ARR↑SAM236↑MACA2246↖↓<<6≡

NNNN

**f.** Current Flight Plan (CPL) Messages. Originated by and transmitted in a step-by-step mode between successive ACCs and between the last ACC to the control at the airport of intended landing. CPLs contain only information relevant to that portion of the route of flight which extends from the point of entry into the next control area or FIR to the airport of intended landing.

**g.** Acceptance (ACP) Messages. Transmitted when the data contained in a CPL message are found to be acceptable to the receiving ACC.

**h.** Flight Plan Cancellation (CNL) Messages. Transmitted when a current (CPL) or filed flight plan (FPL) message was transmitted and the flight is cancelled.

## 7-69. AIR MOBILE SERVICE (AMS)

**a.** For maximum communications efficiency of a network, the individual networks are limited geographically to areas permitting effective coordination and cooperation between ground stations.

**b.** For any individual route segment, the AMS communication requirements will normally be met by two or more network stations serving the flights on that route segment. In general these primary stations serve the ACC serving the FIRs and the points of take-off and landing. In some cases, additional suitably located stations are required to complete the communications coverage.

**c.** Each of these stations may be required at some stage of the flight to exchange communications with the aircraft and, when not so engaged, to intercept as required communications exchanged between the aircraft and any one of the other stations.

**d.** The stations serving the ACCs providing regular network service to aircraft operating over route segments in that ACCs FIR are termed regular stations. Other stations of the network will be required only to assist communications for that FIR in the event of communications difficulties.

**e.** Whenever communications conditions permit, aircraft should transmit their messages to the primary station of the network from which they can be most readily delivered to their ultimate destinations. In particular, aircraft reports required by ATC should be transmitted to the network station serving the ATC center in whose area the aircraft is flying. Conversely, messages to aircraft in flight should be transmitted direct to the aircraft by the network station serving the location of the originator.

**f.** Messages passed from aircraft to a network station should be intercepted and acknowledged by other stations which serve locations where the information is also required. Such intercepts provide instantaneous delivery of information and eliminates the transmission of messages over the AFTN. Networks may not be used for transmission of aircraft reports except under the intercept principle. Acknowledgments of intercept shall be made immediately after the acknowledgment of receipt by the station to which the message was passed. In the absence of acknowledgment of intercept within one minute, the station accepting the message from the aircraft shall forward the message via the AFTN to the ultimate destinations.

**g.** In areas or on routes where radio conditions, length of flights, or distance between stations require additional measures to ensure continuity of communications throughout the route segment, the stations shall share the responsibility of primary guard whereby each station will provide the primary guard for that portion of the flight during which the messages from the aircraft can be handled most effectively by that station.

**h.** During its tenure of primary guard, each station will:

1. Be responsible for designating primary and secondary frequencies for communications with aircraft.

2. Receive all position reports and handle other messages from and to the aircraft essential to the safe conduct of the flight.

3. Be responsible for the action required in case of failure of communication.

**i.** Transfer of primary guard from one primary station to the next will normally take place at the time of traversing FIR or control area boundaries. When communications conditions so demand, a station may be required to retain primary guard beyond geographical boundaries or release its guard before the aircraft reaches the boundary.

## 7-70. AIREPS (POSITION REPORTS)

**a.** When recording an AIREP on teletypewriter or written copy, the following procedure shall be used:

1. Each line shall begin at the left margin.

2. A new line shall be used for each transmission.

3. Each communication shall contain as much as possible or all of the following items in the order shown:

(a) Message type ARP.

(b) Call sign of the calling station (aircraft).

(c) Text of message.

(d) Call sign of the station called or receiving station, followed by the appropriate abbreviation to indicate "received", "readback", or "no reply heard."

(e) Call sign of station (s) acknowledging intercept followed by appropriate abbreviation to indicate "received".

(f) Designation of frequency used (see note).

(g) Time in UTC of the communication.

4. Missing parts of the message text shall be indicated by the letter M.

**Note.** — Two letter frequency designators:

2932 QI
2998 QL
*2866 QM
5628 TO

*5631 TY
6532 UA
8903 VO
10048 WH

11384 XM
13294 YF
13300 YH
17904 ZC

*For Alaskan domestic use only.

**Example.** —

ARP CP583 KBRO 2100 F330 MMTM 2128 ETA XMMMX 2248 FUEL 0324
KNEW RB
*MMMX R*

TM2103

**b.** AIREPs may be filed from any aircraft in flight within WMO areas of responsibility in conformity with ICAO requirements for position, operational or meteorological reporting in AIREP format. AIREP information shall be disseminated to ATC, company, and meteorological offices as required. AIREPs consist of 3 sections comprised of 12 items. AIREPs may be filed in one, two, or three sections as follows:

1. Section 1. Routine report — A position report (PSNRP) comprising the following items:

(a) Message Type Designator — ARP

*Item 1.* Aircraft Identification.

*Item 2.* Position. Record position in latitude (degrees as 2 numerics or degrees and minutes as 4 numerics, followed without a space by N or S) and longitude (degrees as 3 numerics or degrees and minutes as 5 numerics, followed without a space by E or W) or as a significant point identified by a coded designator (2 to 5 characters) or as a significant point followed by a magnetic bearing (3 numerics) and a distance in nautical miles (3 numerics) from the point. (e.g. 4620N07805W, 4620N078W, 46N078W, LN, MAY or DUB180040). Precede significant point by ABM (ABEAM), if applicable.

*Item 3.* Time. Record time in hours and minutes UTC (4 numerics). The time recorded must be the actual time of the aircraft at the position and not the time of origination or transmission of the report.

*Item 4.* Flight Level or Altitude. Record flight level as F followed by 3 numerics (e.g. F370) when on standard pressure altimeter setting. Record altitude in meters followed by M or in feet followed by FT, when QNH, record ASC (level) when climbing, or DES (level) when descending to a new level after passing the significant point.

*Item 5.* Next position and Time Over. Record the next reporting point and the estimated time over such reporting point, or record the estimated position that will be reached one hour later, according to the position reporting procedures in force. Use the data conventions specified in Item 2 for position. Record time in minutes past the hour (2 numerics) or in hours and minutes UTC (4 numerics) when necessary.

**Example.** — (PSNRP portion of AIREP prepared by New Orleans and addressed to Toronto and Mexico City, Canadian Pacific Airlines (CP)).

FF CYYZCP MMMMXCP
122105 KNEWYF
←ARP *CP583KBRO 2100 F370* MMTM28
KNEW RB

MMMM R
TM2103
NNNN

2. Section 2. When reported by the pilot, comprising:

*Item 6.* Estimated Time of Arrival (ETA). Record ETA by the four letter location indicator of the airport of first intended landing or, if no location indicator exists, the name of the airport, followed by the estimated time of arrival at this aerodrome in hours and minutes UTC (4 numerics).

*Item 7.* Endurance. Record fuel in hours and minutes (4 numerics).

**Example. —** (AIREP comprised of PSNRP, and aircraft operator information)

FF CYYZCP MMMZCP
122105 KNEWYF
—ARP CP583KBRO 2100 F370 MMTM28
MMMX 2248 FUEL0324
KNEW RB
MMMX R
TM2103
NNNN

3. Section 3. A full AIREP comprising a PSNRP, company information, and enroute meteorological information.

*Item 8.* Air Temperature. Record PS (plus) or MS (minus) followed, without a space, by the temperature in degrees centigrade, corrected for instrument error and airspeed (e.g. MS05).

*Item 9.* Spot Wind or Mean Wind and Position Thereof. Spot wind is used whenever practicable. Spot wind normally refers to the position given in (Item 2). When a spot wind is given for any other location, record its position. Whenever it is not practicable to record spot wind, record the mean wind between two fixes. Followed by the word "mean" and the position of the mid-point between the two fixes. Record wind direction in degrees true (3 numerics) and wind speed in knots (2 or 3 numerics), separated by an oblique stroke (e.g., 345/55). Record the direction of variable winds of a given strength as "VRB" (e.g. VRB/10). Record light and variable winds or calm as "LV." If wind position is required, record latitude and longitude to the nearest whole degree, using the data convention specified for (Item 2) (e.g., 22N180W).

*Item 10.* Turbulence (TURB). Record severe turbulence as TURB SEV and moderate turbulence as TURB MOD. If turbulence is experienced in cloud add INC (in cloud). If in subsonic flight report severe turbulence as soon as possible after occurrence. This requires AIREP SPECIAL. Record and report moderate turbulence only if encountered within last 10 minutes prior to reaching position in Item 2. If in transonic or supersonic flight, report severe or moderate turbulence as soon as possible after occurrence. This requires AIREP SPECIAL.

*Item 11.* ICING. Record severe icing as ICE SEV, moderate icing as ICE MOD. Report severe icing as soon as possible after occurrence. This requires AIREP SPECIAL. Record and report moderate icing only if encountered within last 10 minutes prior to reaching position Item 2.

*Item 12.* Supplementary Information. Recorded data which in the opinion of the pilot-in-command are of aeronautical interest.

(a) Present weather: Rain (RA); Snow (SN); Freezing rain (FZRA); Funnel cloud (FA) (waterspout or tornado); Thunderstorm (TS) on or near flight path; Front (FRONT).

(b) Clouds: If heights of cloud bases and/or tops can be accurately ascertained; amount of clouds scattered (SCT) if clear intervals predominate, broken (BKN) if cloud masses predominate, or continuous (CNS), type of clouds only if cumulonimbus (CB) and indication of bases (BASE) and/or tops (TOP) together with the respective height indication F (number) or (number) or (number) M/or (number) FT.

(c) Turbulence and Icing: Moderate turbulence (TURB MOD), if in subsonic flight, or moderate aircraft icing (ICE MOD), observed prior to the last 10 minutes.

(d) D-Value: Reading or radio altimeter minus reading of pressure altimeter set to 1013.2 mb and corrected for calibration and position error; record differences as PS (plus) or MS (Minus) followed without a space, by the number of meters or feet.

(e) Operationally significant weather radar echoes (echo or echo line). True bearing of center of echo or line and distance from aircraft in nautical miles; if appropriate, indicate weather intensifying or weakening and whether no gaps, some gaps or frequent gaps are observed.

(f) Significant differences between conditions encountered and those forecast for the flight, e.g. forecast thunderstorms not observed or freezing rain not forecast.

(g) If the position of the phenomenon reported is not the same as the position given under Item 2, report it after the phenomenon.

**Example.—** (full AIREP)

FF CYYZCP MMMXCP KMIAYM
162215 MJSJYF
← ARP CP5832709N05415W 2212 F330
23N056W 59 0035 FUEL 0324 M534 310/60
MEAN 2543N05532W TURB MOD ICE MOD SCT
CB TOP F280
MJSJ RB

TM2214
NNNN

**Note. —** Transmit to WMO office serving FIR where report is made.

## 7-71. AIREP SPECIAL (ARS)

**a.** Turbulence — SEV TURB encountered while in subsonic flight is reported as soon as possible after occurrence and requires AIREP SPECIAL. MOD TURB is reported only if encountered within 10 minutes prior to reaching reporting position. If in transonic or supersonic flight MOD and SEV TURB is reported as soon as possible and requires AIREP SPECIAL.

**b.** ICING — SEV ICE is reported as soon as possible after occurrence and requires AIREP SPECIAL. MOD ICE is reported only if encountered within last 10 minutes prior to reaching reporting position.

**Example. —**

FF KMIAYM
211538 MJSJYF
←ARS PA101 5045N02015W 1536 F310 ASC F350
51N030W 21 FUEL 0900 ICE SEV
NNNN

## 7-72. thru 7-79. RESERVED

# Chapter 8. SEARCH AND RESCUE (SAR) PROCEDURES FOR VFR AIRCRAFT

## Section 1. GENERAL

### 8-1. RESPONSIBILITY FOR SAR ACTION

The departure station is responsible for SAR action until receipt of the destination station's acknowledgment for the flight notification message. This responsibility is then transferred to the destination station.

### 8-2. OVERDUE AIRCRAFT ON FLIGHT PLAN

Consider an aircraft on a VFR or DVFR flight plan overdue when it fails to arrive 30 minutes after its ETA and communications or location cannot be established.

### 8-3. OVERDUE AIRCRAFT NOT ON FLIGHT PLAN

Consider an aircraft not on a flight plan as overdue at the actual time a reliable source reports it to be at least one hour late at destination. Based on this overdue time, apply the same procedures and action times as for aircraft on a flight plan. (Reference paragraph8-10, 8-20, 8-30). When such a report is received, verify (if possible) that the aircraft actually departed and that the request is for a missing aircraft rather than a person. Refer missing person reports to the appropriate authorities.

### 8-4. thru 8-9. RESERVED

## Section 2. OVERDUE AIRCRAFT ACTION

### 8-10. INITIAL ACTION/QAL

**a.** As soon as a VFR aircraft (military or civil) becomes overdue, the destination station (including intermediate destination tie-in station for military aircraft) shall attempt to locate the aircraft by checking all adjacent flight plan area airports. Also check appropriate terminal area facilities and ARTCC sectors (through Area Managers). If this communications search does not locate the aircraft, transmit the signal "QALQ" to the departure station and, when different, also to the FSS with which the flight plan was filed.

**Examples. —**

SPS FF MEM
QALQ N12345
NNNN
SPS FF MEM
QALQ N12345 FPNO
NNNN

**Note. —** If it is determined by the flight service specialist that the local field search cannot be completed before the INREQ transmission time, the QALQ shall be transmitted in time to receive the information for the INREQ message. The local field search shall continue without reference to time until completed.

**b.** Use of long distance telephone in carrying out SAR responsibilities is authorized when appropriate.

**c.** In the case of a U.S. registered aircraft, or any aircraft known to be piloted by or transporting U.S. citizens and en route within a foreign country or between two foreign countries, if the overdue report is received either from someone directly concerned or from aviation authorities of a foreign country, notify the Washington Communications Control Center immediately via Area B message addressed to RWA.

**d.** *Alaska*—In addition to **a.** and **c.** above, address QALQ, INREQ, or ALNOT messages and replies to PANCYA and PAEDYC.

**Note. —** RCCs other than Elmendorf (PAEDYC) are not on the Service B teletypewriter system and must be notified by telephone.

**e.** Upon receipt of a QALQ message from the destination station concerning a flight for which a proposed flight plan was transmitted, the station which transmitted the proposal shall immediately transmit a message to the destination station containing all information not previously sent (Ref. paragraph8-11**b**). No further search action is required of the station which transmitted the proposal and no further messages will be received by this facility unless the search area extends into its flight plan area.

### 8-11. ACTION BY DEPARTURE STATION ON RECEIPT OF QALQ

Upon receipt of the QALQ inquiry, the departure station shall check locally for any information about the aircraft, and take the following action:

**a.** If the aircraft is located, notify the destination station.

**Example. —**

MEM FF SPS
CLN QALQ N12345 QAL 1255
NNNN

**Note. —** In the case above, the destination station would close the file on N12345.

**b.** If unable to obtain additional information, transmit a message to the destination station containing all information not previously sent. Include any verbal or written remarks made by the pilot which may be pertinent to the search.

**Example. —**

MEM FF SPS
CLN QALQ N12345 C150/X TAS 110 D1234X MEM 85 PBF ADM
N12345 C150/X TAS 110 D1235 MEM 85 PBF ADM
SPS FEXHA 1635 JOHN KENDRICK 2101 SIOUX
DRIVE CDS 2 POB BLUE WITH RED TRIM
NNNN

### 8-12. CANCELLATION OF THE QALQ

If the aircraft is located by the destination station after the QALQ signal is sent, transmit a cancellation message addressed to all recepients of the QALQ.

**Example. —**

SPS FF MEM
CNL QALQ N12345
NNNN

### 8-13. thru 8-19. RESERVED

## Section 3. INFORMATION REQUESTS (INREQ)

### 8-20. INREQ

If the reply to the QALQ is negative, or if the aircraft has not been located within 30 minutes after it becomes overdue:

**a.** The destination station shall transmit a numbered INREQ message to the departure station, flight watch control stations with communication outlets along the route, other FSSs along the route, ARTCCs along the route, and RCC.

1. If these stations are within 50 miles of the Great Lakes, also transmit the INREQ to the Cleveland FSS.

2. *Pacific*—Hawaii station's shall give preliminary notification to Honolulu SARCC as follows:

(a) Hilo by long distance telephone.

(b) Honolulu FSS shall use local telephone.

(c) Secondary means for Hilo shall be Area B to Honolulu FSS and thence by telephone between Honolulu FSS and the SARCC.

**b.** Include all information in the INREQ message that will assist in search activities.

**Note 1. —** The National Search and Rescue Plan is outlined in the AIM.

**Note 2. —** Flight watch control stations with communication outlets and FSSs within 50 miles of the Great Lakes are: Bradford, Buffalo, Chicago, Cleveland, Detroit, DuBois, Erie, Findlay, Green Bay, Hibbing, Houghton, Jackson, Lansing, Marquette, Milwaukee, Minneapolis, Pellston, Pittsburgh, Rockford, Saginaw, Sault Ste. Marie, South Bend, Traverse City, Watertown, Youngstown.

**Examples. —**

LOU DD HUF IND LAF CHI CLE ZID ZAU

RCC

LOU 001 HUF IND LAF CHI CLE ZID ZAU

INREQ N1234A BE55/T TAS 170 D1230 CGX 95 DR LOU

FEXHA 1730 PILOT ROBERT BELL 2345 10TH ST

BNA FONE 615 123 4567 4 POB BLUE AND

WHITE (any other information available)

NNNN

CEC DD PDX OAK UKI ACV ZOA ZSE RCC

CEC 002 PDX OAK UKI ACV ZOA ZSE

INREQ N1234B C182/X OAK CEC PILOT LEROY

ROACHE 118 MAIN ST CEC WIFE REPORTS ETA 1230

NNNN

**c.** RCC does not have transmit capability. Acknowledgment is not required for messages to RCC.

### 8-21. ACTION UPON RECEIPT OF INREQ

Stations receiving an INREQ shall take the following action:

**a.** En route stations—Seek information about the aircraft by checking facility records and by checking all flight plan area airports along the proposed route of flight. Deliver to associated terminal area facilities. Reply to the INREQ within one hour. If unable to complete the search within one hour, forward a status report, followed by a final report when the search is completed. If the reply contains pertinent information (e.g., aircraft location or position report), transmit it to the originator by numbered message and activate printers of all INREQ addressees.

**Note. —** Upon receipt of INREQs and ALNOTs, terminal area facilities and ARTCCs are required to check facility records, report findings to FSS who alerted them within one hour, and retain in an active status until cancelled (See 7110.65, 9-18).

**b.** Departure station—Hold the INREQ message in suspense.

**c.** Tie-in station—Cleveland FSS, when an addressee, shall notify Cleveland U.S. Coast Guard RCC.

**d.** *Pacific*—Hawaiian stations, notify Honolulu SARCC by telephone direct.

**Examples. —**

LAF DD LOU

CLN INREQ RE N1234A NEG INFO

NNNN

HUF DD LOU IND LAF CHI CLE ZID ZAU RCC

HUF 007 LOU

CLN INREQ RE N1234A OVR HUF 1355 NO OTHER INFO

NNNN

### 8-22. CANCELLATION OF INREQ

The INREQ originator shall transmit a numbered message containing the location of the aircraft to all INREQ addressees when the aircraft is located. Notify associated terminal area facilities.

**Example. —**

LOU DD HUF IND LAF CHI CLE ZID ZAU RCC

LOU 003 HUF IND LAF CHI CLE ZID ZAU

INREQ N1234A CNLD. LCTD BMG

NNNN

**8-23. thru 8-29. RESERVED**

## Section 4. ALERT NOTICES (ALNOT)

### 8-30. ALNOT

If the replies to the INREQ have been negative, or if the aircraft has not been located within one hour after transmission of the INREQ, whichever occurs first, the destination station shall transmit an ALNOT.

**a.** Address ALNOT messages to all Area B circuits serving the ALNOT search area, to your Regional Office Communications Control Center (CCC), and to RCC. If the search area is within 50 miles of the Great Lakes, also address to Cleveland FSS, which notifies the Cleveland RCC. The search area is normally that area extending 50 miles on either side of the proposed route of flight from the last reported position to the destination. However, if requested by the RCC, or at the discretion of the destination station, the ALNOT search area may be expanded to the maximum range of the aircraft.

**Note. —** Automated FSSs require specific addressing.

**b.** *Alaska*—Address to PANCYG. (Only FSSs in the ALNOT search area are required to acknowledge.)

**c.** Include all information in the ALNOT message that will assist in search activities (same as INREQ plus any additional information received).

**Example. —**

ORL SS XXII XXXJ XXXE XXXW DCA RTL RCC

ALNOT. N1513B C182/D TAS 150 D1840 DCA

85 DR ORL OVR RMT 2005 FEXHA 2310

PILOT GENE HIGGINS 5233 10TH ST DCA

FONE 202 426 8802 2 POB RED WITH WHITE

TRIM (any other information available)

NNNN

**d.** Ten minutes after issuance of the ALNOT call Scott AFB to assure delivery of the ALNOT and to answer any inquiries.

**Note. —** RCC (Scott AFB) phone numbers are: FTS (direct) 618-256-4815, (Scott AFB operator) 255-1110-(switchboard) ask for extension 130; Commercial 618-256-4815, 800-851-3051.

### 8-31. ACTION UPON RECEIPT OF ALNOT

Upon receipt of an ALNOT, each station whose flight plan area extends into the ALNOT search area shall:

**a.** Immediately conduct a communications search of those flight plan area airports which could accommodate the aircraft and which were not checked during the INREQ search. Deliver to associated terminal area facilities. Request appropriate law enforcement agency to check airports which cannot be contacted otherwise.

**b.** Within one hour after receipt of the ALNOT, notify the originator of the results or status of the communications search. If the reply contains pertinent information (e.g., aircraft location or position report), transmit it to the originator by numbered message and activate printers of all ALNOT addressees.

**Examples. —**

SAV SS ORL

CLN ALNOT RE N1513B KFLD CK COMPLT NEG INFO

NNNN

JAX SS ORL XXII XXXJ XXXE XXXW DCA RTL RCC

JAX 004 ORL

CLN ALNOT RE N1513B ACFT LCTD OG JAX

NNNN

**c.** Stations within the ALNOT search area shall broadcast the ALNOT as follows:

1. Immediately after receipt.

2. *Alaska*—Following opening announcement in the scheduled broadcast, request pilots to standby for the ALNOT.

**Example. —**

"ALERT NOTICE, ATTENTION ALL PILOTS, STAND BY FOR AN ANNOUNCEMENT OF OVERDUE AIRCRAFT AT CONCLUSION OF THIS BROADCAST."

3. Transmit at H + 15 for two hours following receipt. If the ALNOT is received during night hours, repeat the announcement at H + 15 for 2 hours following sunrise.

**Example. —**

"Alert Notice. Twin Cessna Two Two Tango departed Rock Springs along Victor Six and Thirty-two to Salt Lake City. Color red. This aircraft overdue; if sighted, inform nearest FAA station."

**d.** Request search assistance from aircraft traversing the search area. If the overdue aircraft is equipped with an emergency locator transmitter, include in the broadcast a request for aircraft to monitor 121.5 MHz.

**Example. —**

"Aircraft is equipped with emergency locator transmitter. All aircraft are requested to listen on 121.5 MHz for beacon transmission."

### 8-32. REPORTING ALNOT STATUS TO RCC

If the extended communications search fails to locate the aircraft or if one hour has elapsed since

ALNOT transmission, whichever occurs first, the destination station shall call the RCC and , if appropriate, the Cleveland FSS, which notifies the Cleveland RCC. Provide all pertinent available information about the overdue aircraft not already provided in the ALNOT. Include:

**a.** Agency and person calling.

**b.** Details of flight plan. If aircraft was not on a flight plan, include all facts about the source of the report.

**c.** Time the last radio transmission was received, by whom, and the frequency used.

**d.** Last position report.

**e.** Whether or not an ELT signal was heard or reported along the route of flight.

**f.** Action taken and proposed action by the reporting station.

**g.** Upon request, furnish positions of other aircraft known to be along or near the route of flight of the missing aircraft.

## 8-33. CANCELLATION OF ALNOT

The ALNOT remains current until the aircraft is located or the search is suspended by the RCC. The ALNOT originator shall then transmit a cancellation message addressed to all recipients of the ALNOT. Each facility shall notify all previously alerted facilities and agencies of the cancellation.

**Examples. —**

ORL SS XXII XXXJ XXXE XXXW DCA RTL RCC
ALNOT N1513B CNLD. ACFT LCTD JAX
NNNN

ORL SS XXII XXXJ XXXE XXXW DCA RTL RCC
ALNOT N1513B CNLD. SEARCH SUSPENDED
NNNN

## 8-34. thru 8-39. RESERVED

## Section 5. OTHER SAR ACTIONS

### 8-40. CONTACT WITH AIRCRAFT CROSSING HAZARDOUS AREA

When lake, island, mountain, or swamp reporting service programs have been established and a pilot requests the service, establish contact every 10 minutes (or at designated position check points) with the aircraft while it is crossing the hazardous area. If contact with the aircraft is lost for more than 15 minutes, alert Search and Rescue.

**Note. —** Hazardous Area Reporting Service and chart depictions are published in the AIM, Basic Flight Information and ATC Procedures.

### 8-41. CANADIAN TRANSBORDER

**a.** Assume responsibility for initiating SAR action on transborder aircraft upon acknowledgment for the inbound flight notification message.

**b.** When SAR action is initiated, the destination and departure facilities are responsible for all communications search actions within their respective countries and for alerting their respective RCC.

**c.** Canadian communications search procedures and action times are similar to U.S. procedures. They will address all SAR messages to the U.S. departure FSS who is then responsible for initiating SAR action for the U.S. portion of the route of flight.

**d.** For inbounds from Canada, apply standard U.S. SAR procedures contained in this section for the U.S. portion of the route. Include the Canadian departure facility as an addressee on all SAR messages since that facility is responsible for initiating SAR action for the Canadian portion of the route of flight.

**e.** Upon receipt of a Canadian QALQ, the departure FSS shall take the following actions:

1. Check locally for any information about the aircraft.

2. If unable to obtain additional information, or within 15 minutes after receipt of the QALQ, transmit a message to the destination facility containing all flight plan information not previously sent.

**f.** Upon receipt of a Canadian INREQ, the departure FSS shall transmit an INREQ for the U.S. portion of the route of flight and reply to Canada within 1 hour in accordance with standard INREQ procedures in this section.

**g.** Upon receipt of a Canadian ALNOT, the departure FSS shall transmit an ALNOT for the U.S. portion of the route and reply to Canada within 1 hour in accordance with standard ALNOT procedures in this section.

### 8-42. thru 8-49. RESERVED

# Chapter 9. AVIATION WEATHER SERVICES

## Section 1. HOURLY SURFACE METEOROLOGICAL OBSERVATION

### 9-1. GENERAL

Surface meteorological observations are filed at scheduled and unscheduled intervals with stations having sending capability to WMSC for dissemination on the Service A domestic aviation weather system. These reports are: hourly airway surface observations (SA), hourly record special airway observations (RS), non-hourly special airway observations (SP), and supplemental surface observations (SW). All reports will include a report type followed by the four digit time of the observation.

### 9-2. PREPARATION FOR TRANSMISSION (SA)

Prepare SA reports for transmission within the sequence collection (A1 Scan) in accordance with the following examples. WMSC will poll each station with the following coded sequence: ≡<∨<<∨ (station identifier) >

**a.** Low Speed Service A.

1. A polled station entering its own single-line report in the hourly scheduled A1 collection: SA 1153 E50 OVC 20 159/54/30/2015/991 6∨

2. A polled station entering its own multiple-line report in the hourly scheduled A1 collection: SA 1153 E50 OVC 20 159/54/30/2015/991<≡ (continuation) 6 ∨

3. A polled station (PNE) entering its own and another (PHL) report in the A1 collection: (Text of the report polled)≡<<∨

PHL> SA> (Time) > (Text) 6∨

4. A polled station (BOS), entering FINO during hours that a report is not available from a location for which it enters the SA collection:

(BOS SA Report)≡<<∨

OWD FINO 6∨

5. Errored or delayed SA reports will be entered as unscheduled products in the A2/A3 unscheduled collection. A polled station transmitting a corrected report in the A2/A3 collection:

Errored Report

SA>COR>(Time)>(SA Report) 8≡6∨

Delayed Report

SA>(Time)>(SA Report) 8≡6∨

6. A polled station (PNE), entering another (PHL) facility's errored or delayed SA report in the A2/A3 collection:

Delayed Report

≡<<∨PHL >SA> (Time)(SA Report) 8 ≡6∨

Errored Report

≡<<∨PHL>SA>COR>(Time) (SA Report) 8≡6∨

**b.** Medium Speed Service A.

1. Leased Service A System (SAS) data: enter in accordance with SAS Operating Procedures Handbook, Chapter II, section II (b)3, and message formats listed above.

2. AWANS/MAPS data: enter in accordance with local procedures.

### 9-3. PREPARATION FOR TRANSMISSION (SP)

Special surface observations shall be prepared and entered in the first available collection period, unless classified as urgent, as indicated in the following examples:

**a.** A polled station transmitting a record special report in the A1 collection:

RS > (Time) > (Report) 6∨

**b.** A polled station transmitting a special report in the A2/A3 unscheduled collection:

SP > (Time) > (Report) 8≡ 6∨

### 9-4. URGENT SPECIALS (USP)

An urgent special observation contains information of a tornado, funnel cloud or waterspout. These reports require special handling and shall be transmitted to WMSC immediately, using the "break-in" procedure if an A2/A3 collection is not imminent. The WMSC recognizes the report type designator "USP" as urgent, and will disseminate the report to all appropriate circuits immediately. WMSC will take no action if it receives a message via the "break-in" procedure if it does not contain the urgent report type designator. "Break-in" procedure is not required if the transmission is made in answer to the A2/A3 collections. An urgent entry in the (A1) collection will be handled as a routine message; thus, the "break-in" procedure must be used during this scan if special handling is required. (see paragraph237)

**a.** A polled station transmitting an urgent special in the A2/A3 collection:

USP> (Time) (Report) 8≡ 6∨

**b.** A polled or non-polled station (DAL), transmitting an urgent special using the "break-in" procedure:

≡<∨<<∨DAL> USP> (Time) (Report) 8≡ 6∨

## 9-5. PREPARATION FOR TRANSMISSION (SW)

Prepare supplementary surface observations for transmission in the A2/A3 collection in accordance with the following examples:

**a.** A polled station entering its own report:

SW> (Time) (Report) 8≡ 6∨

**b.** A polled station (ELM), entering a single report (ITH) for which it has transmitting responsibility:

≡<<∧ITH> SW> (Time) (Report) 8≡ 6∨

**c.** A polled station (MSP), entering multiple reports, (TVF and FRM), for which it has transmitting responsibility:

≡<<∨TVF>SW>(Time) (Report)
8≡<<∧FRM>SW>(Time) (Report) 8≡6∨

**d.** A polled station (MSP) entering a special report for its own station and supplementary reports from several locations when report types are not used:

≡<∨<<≡MSP>SP>(Time) (Report)
8≡<<∨
MSP>Z>SW>≡<<∨
MBL>(Time) (SW Report) 8≡<<∨
IMT>(Time) (SW Report) 8≡<<∨
MNM>(Time) (SW Report) 8≡<<∨
RHI>(Time) (SW Report) 8 ≡6∨

**Note.** — Refer to Service C Handbook 7330.7-22 for a description of the non-WMD Z format.

## 9-6. DISTRIBUTION

Hourly surface observations (SA/RS/SP) and supplementary surface observations (SW) are disseminated by WMSC in accordance with predetermined lists for each circuit. All SA/RS/SP reports are stored in WMSC until H+55 of each hour. These reports are then released in anticipation of the new reports at H+00. All SW reports are stored in WMSC for three hours from time of receipt, unless replaced by an updated report from the same location. For this reason all users of SW reports should make careful note of the observation time.

## 9-7. thru 9-9. RESERVED

## Section 2. PILOT WEATHER REPORTS (UA)

### 9-10. GENERAL

A Pilot Report (PIREP), must be appended to the hourly surface observation to be entered in the Service A, A1 poll. It must also pertain to the same location as the surface observation. During the Service A, A2/3 polls, the PIREP(s) shall be entered as individual reports. Facilities having a dedicated request-reply circuit, or Leased Service A (SAS) system, may enter these data anytime between minutes 04 and 50, each hour.

### 9-11. RESPONSIBILITY

FSS specialists shall actively solicit PIREPs in conjunction with preflight and in-flight communications with pilots and assure timely dissemination of the PIREP information. Each facility should make special efforts to obtain PIREPs on climb-out and approach weather conditions at airports within their flight plan area.

### 9-12. PIREP DISPLAY

Maintain a PIREP display to conform with the particular requirements of your station. If it is posted for internal use only, symbology may be used at the facility's discretion. If it is to be displayed as a pilot self-briefing aid, the use of contractions; e.g., OVC, shall be applicable.

### 9-13. SOLICITING PIREP'S Solicit PIREP's for the affected area/s when one or more of the following weather conditions exist, are reported, or forecast to occur:

(1) Ceilings at or below 5,000 feet.

(2) Visibility reported on the surface or aloft is 5 miles.

(3) Thunderstorms and related phenomenon.

(4) Turbulence of moderate degree or greater.

(5) Icing of light degree or greater.

(6) Wind shear.

**b.** Also solicit PIREPS regardless of weather conditions when:

(1) An NWS or an ATC facility indicates a need because of a specific weather or flight assistance situation.

(2) Necessary to determine flying conditions pertinent to natural hazards (mountain passes, ridges, peaks) between the weather reporting stations.

(3) The station is designated as responsible for PIREP's in an offshore coastal area.

**c.** Flight watch specialists shall solicit sufficient PIREPs, to remain aware of flight conditions.

**d.** To solicit PIREP's within a specific area, broadcast a request on NAVAIDs, transcribed broadcast facilities, or a selected communications frequency.

*Phraseology:*

PILOT WEATHER REPORTS REQUESTED (location/area) CONTACT (location ) RADIO/FLIGHT WATCH ON (frequency) TO REPORT THESE CONDITIONS.

### 9-14. RECORDING PIREP DATA

Record PIREP data on FAA Form 7110-2, or material deemed appropriate.

### 9-15. DATA TO BE INCLUDED IN PIREP's

Include the following reports flight of conditions, as appropriate:

**a.** Height and coverage of cloud bases, tops, and layers.

**b.** Flight Visibility.

**c.** Restrictions to visibility and weather occurring at altitude.

**d.** Air temperature and changes to temperature with altitude or range.

**e.** Direction and speed of wind aloft.

**f.** Extent and intensity of turbulence. See paragraph **9-16.**

**g.** Extent, type and intensity of icing. See paragraph **9-17**

**h.** Weather conditions and cloud cover through mountain passes and over ridges and peaks.

**i.** Location, extent and movement of thunderstorms and/or tornadic activity.

**j.** Excessive wind aloft, LLWS and other phenomena bearing on safety and effeciency of flight.

### 9-16. REPORTING TURBULENCE IN PIREPS

**a.** Turbulence reports should include location, altitude or range of altitudes, whether in clouds or clear air, and aircraft type. The degree of turbulence intensity is determined by the pilot. It is essential that the report is obtained and disseminated when possible in conformance with the U.S. Standard Turbulence Criteria Table as follows:

"Light"—Loose objects in aircraft remain at rest.

"Moderate"—Unsecured objects are dislodged. Occupants feel definite strains against seat belts and shoulder straps.

"Severe"—Occupants thrown violently against seat belts. Momentary loss of aircraft control. Unsecured objects tossed about.

"Extreme"—Aircraft is tossed violently about, impossible to control. May cause structural damage.

**b.** Report CAT or CHOP if used by the pilot to describe the type of turbulence

## 9-17. REPORTING ICING CONDITIONS IN PIREPS

Icing reports should include location, altitude or range of altitudes, type aircraft, intensity and type of icing.

**a.** Icing type is described as follows:

"Rime"—Rough, milky, opaque ice is formed by the instantaneous freezing of small supercooled water droplets.

"Clear"—A glossy, clear or translucent ice formed by the relatively slow freezing of large supercooled water droplets.

"Mixed"—A combination of rime and clear.

**b.** Icing intensity is described as follows:

"Trace"—Ice becomes perceptible. Rate of accumulation slightly greater than sublimation. It is not hazardous even though de-icing/anti-icing equipment is not utilized unless encountered for an extended period of time—over one hour.

"Light"—The rate of accumulation may create a problem if flight is prolonged in this environment (over one hour). Occasional use of de-icing/anti-icing equipment removes/prevents accumulation. It does not present a problem if de-icing/anti-icing is used.

"Moderate"—The rate of accumulation is such that even short encounters become potentially hazardous and use of de-icing/anti-icing equipment or diversion is necessary.

"Severe"—The rate of accumulation is such that deicing/anti-icing equipment fails to reduce or control the hazard. Immediate diversion is necessary.

## 9-18. MEANS TO COLLECT PIREPS

Use the following methods, as appropriate, to collect PIREP's:

**a.** Inform pilots of a need for PIREPs during preflight weather briefings.

**b.** Request on postflight basis.

**c.** Request PIREPs during regular air-ground contacts.

**d.** Broadcast a request on NAVAID frequencies.

**e.** Append a request for PIREPs on TWEB and PATWAS broadcasts.

**f.** Coordinate with air carrier and military operations offices, military pilot-to-forecaster units and local aircraft operators.

**g.** Request PIREP solicitation from other air traffic facilities.

1. Contact the supervisor in terminal facilities.

2. Contact the CWSU or facility weather coordinator at an ARTCC.

**Reference.** FAAH 7210.3, paragraph 820.

## 9-19. PIREP CLASSIFICATION

Categorize PIREP's as follows:

**a.** URGENT—Weather phenomena reported by a pilot which represents a hazard, or potential hazard, to flight operations. Disseminate reports of the following conditions as URGENT PIREP's:

1. Tornados, funnel clouds, or waterspouts.

2. Severe or extreme turbulence (including clear air turbulence).

3. Severe icing.

4. Hail.

5. Low level wind shear.

**Note. —** Defined as wind shear within 2,000 feet of the surface.

6. Any other weather phenomena reported which are considered by the specialist as being hazardous, or potentially hazardous, to flight operations.

**b.** ROUTINE—Classify as ROUTINE all PIREP's received except those listed above.

## 9-20. PIREP HANDLING

Upon receipt of a PIREP, accomplish the following:

**a.** URGENT:

1. Broadcast it immediately on voice channels of all navigation aids, except ILS. Apply special weather broadcast procedures, except identify the data as "pilot weather report."

2. Deliver it to the ARTCC weather coordinator as soon as possible.

3. Deliver it to the associated WSO as soon as possible.

4. Enter on Service A at the first opportunity unless previously appended to an Aviation Weather Report.

5. Use, as appropriate, in weather briefings.

**b.** ROUTINE:

1. Transmit on Service A on the first available scan.

2. Include local area (within 20-mile radius of FSS) cloud tops and upper layers in remarks of the regular Service A weather report.

3. Include restricted visibility aloft reports in remarks of hourly or special weather reports when

the condition is reported within 20 miles of the nearest weather reporting point.

### 9-21. OFFSHORE COASTAL ROUTES

When your station has been given responsibility for collecting offshore coastal route PIREP's:

**a.** Include the coastal water area when soliciting PIREP's. At least one PIREP is required hourly regardless of weather conditions.

**b.** *Pacific*—Hawaiian Island station areas coincide with the Honolulu ARTCC sectors and the entire Hawaiian area is designated as offshore areas for PIREP purposes.

**Note. —** The AT Division assigns PIREP responsibility for an offshore coastal area, route, or route segment to a specific station. The area assigned will be within the same ARTCC area as the station, and the station shall have adequate air-ground communications coverage over its assigned offshore area.

### 9-22. PIREP PREPARATION

To assure proper dissemination of PIREPs to all system users, the following encoding procedures shall be followed:

**a.** Identify each element by a text element indicator (TEI).

**b.** Ensure each report includes TEIs for message type, location, time, altitude/flight level, type aircraft, and at least one other to describe the reported phenomena.

**c.** Precede each TEI, except message type, with a solidus (/).

**d.** Follow each TEI, except altitude/flight level, with a space.

**e.** Insert zeroes in reported values when the number of digits in the report is less than the number required by the format.

**f.** Use only authorized aircraft designators and contractions.

**g.** In the location TEI use only VHF NAVAID identifiers to describe a fix or route segment (except in Alaska).

**h.** Omit entries of TEIs, except as listed in item **b.** above, for which no data was reported.

### 9-23. PIREP FORMAT

Using TEIs, as described below, prepare PIREPs for system entry in the following format:

**a.** UUA or UA — Message Type. Urgent or routine PIREP.

**b.** /OV — Location of the reported phenomenon(a).

(1) Fix — Location over a NAVAID: (/OV PHX)

(2) Fix — Location in reference to a NAVAID, encoded as a three letter NAVAID identifier, followed by a space, followed by three digits to define the radial and three digits to define the distance in nautical miles: (/OV PHX 095020)

(1) and (2) above, to describe a route:

(/OV AOO—LRP—MIV 280015),

(/OV SAV—ABY),

(/OV TUS 360012—PHX 180040).

**c.** /TM — Time that the reported phenomenon(a) occurred or was encountered. Report time in four digits UTC: (/TM 1315).

**d.** /FL — Altitude/flight level. Enter the altitude in hundreds of feet where the phenomenon(a) was first encountered. If not known, enter UNKN. If the aircraft was climbing or descending, enter the appropriate contraction (DURGC or DURGD) in the remarks section (/RM). If the condition was encountered within a layer, enter the altitude range within the appropriate TEI describing the condition. (lFL093), (/FL310), (/FLUNKN).

**e.** /TP — Type aircraft. Enter aircraft type. If not known, enter UNKN: (/TP PA60), (/TP B707), (/TP P3), (/TP UNKN).

**f.** /SK — Sky cover. Report height of cloud bases, tops, and cloud coverage as follows:

(1) Enter height of cloud bases and tops separated by the sky condition (cloud cover) as reported by the pilot. Heights are reported in hundreds of feet MSL using three digits.

(2) Use authorized contractions for sky cover (CLR, SCT, BKN, OVC).

(3) Cloud cover amount ranges will be entered with a hyphen and with no spaces separating the amounts (BKN-OVC).

(4) Thin layer amounts are preceded by a hyphen (-OVC).

(5) Unknown heights are indicated by UNKN.

(6) If the pilot reports he is in the clouds, enter OVC.

(7) Use spaces between heights and cloud cover contractions.

(8) When more than one layer is reported, separate layers by a solidus (/).

(9) Examples: /SK 045 SCT 058. /SK BKN 045/065 OVC 093, /SK OVC, /SK UNKN OVC. / SK 025-BKN.

**g.** /WX — Flight visibility and flight weather. Report weather conditions encountered by the pilot as follows:

(1) Flight visibility, if reported, will be the first entry in the /WX field. Enter as FV followed

by a two digit visibility value rounded down, if necessary, to the nearest whole statute mile (FV03). If visibility is reported as unrestricted, enter FV99.

(2) Enter flight weather types using one or more of the following standard surface weather reporting symbols:

| | |
|---|---|
| Fog | F |
| Haze | H |
| Smoke | K |
| Dust | D |
| Drizzle | L |
| Rain | R |
| Snow | S |
| Freezing Rain/ Drizzle | ZR, ZL |
| Thunderstorms | T, TRW, TSW |
| Hail | A |
| Funnel Cloud | FUNNEL CLOUD |
| Waterspout | WATERSPOUT |
| Tornado | TORNADO |

(3) Shower activity, not associated with thunderstorms, is encoded as R or S with SHWRS included in remarks if necessary.

(4) Intensity of precipitation is not reported in the /WX field. If necessary, heavy precipitation can be included in the remarks section of the PIREP.

(55) Weather layers are reported in the same format as cloud layers (002 K 006).

(6) When more than one type of weather is reported, report precipitation first, then the visibility restriction. Separate reported elements with a space.

(7) Examples: /WX FV02 R /WX FV03 R F, / WX T.

**h.** /TA — Air Temperature. Report outside air temperature using two digits in degrees Celsius. Prefix negative temperatures with a minus sign (-). (/TA 08), (/TA-32).

**i.** /WV — Wind direction and speed. Encode using three digits to indicate wind direction (magnetic) and three digits to indicated reported wind speed. (/WV 265080).

**j.** /TB — Turbulence. Report intensity, type and altitude of turbulence as follows:

(1) Intensity — Enter intensity first using contractions LGT, MDT, SVR, and EXTRM. Separate a range or variation of intensity with a hyphen, (e.g., MDT-SVR). If turbulence has been forecast, enter reports of no turbulence as NEG.

(2) Type — Enter CAT or CHOP if reported by the pilot.

(3) Altitude — Report altitude only if it differs from value reported in /FL. When a layer of turbulence is reported, separate height values with a hyphen. If lower or upper limits are not defined, use BLO or ABV.

(4) Examples: /TB LGT, /TB MDT-SVR, /TB MDT BLO-080, /TB LGT-MDT 040-085, /TB MDT CHOP, /TB NEG.

**k.** /IC — Icing. Report intensity, type, and altitude of icing as follows:

(1) Intensity — Enter intensity first using contractions TRACE, LGT, MDT, and SVR. Separate reports of a range or variation of intensity with a hyphen. If icing was forecast, but not encountered, enter NEG.

(2) Type — Enter the reported icing type. (RIME, CLR, or MXD).

(3) Altitude — Enter the reported icing altitude only if different from the value reported in the /FL TEI. Use a hyphen to separate reported layers of icing. Use ABV or BLO when layer is not defined.

(4) Examples: /IC LGT RIME, /IC LGT-MDT MXD, /IC SVR CLR 035-062, /IC MDT RIME BLO-095.

**l.** /RM — Remarks. Use this TEI to report phenomenon(a) which is considered important but does not fit in any of the other TEIs.

(1) This includes, but is not limited to: Low level wind shear (LLWS) reports; thunderstorm lines, coverage and movement; hail; lighting; electrical discharge; duststorms; sandstorms; CONTRAILS; and clouds observed but not encountered. Report hazardous weather first in the /RM TEI.

**(2) If the /OV TEI does not adequately describe the location, enter this information in remarks, e.g., /OV DPK 1000010 ... /RM OVR ISP.**

(3) Describe LLWS to the extent possible.

**Example.—**

/RM LLWS 090030-040035 DURGC RY 33L 002-005.

/RM LLWS-15KT 003-SFC DURGD RY 28L PIT.

## 9-24. PIREP ENCODING

**a.** PIREPs entered as individual reports shall be coded by the receiving facility to ensure it is stored and subsequently distributed, with the surface observation location nearest the condition being recorded.

**b.** The following examples illustrate the preparation of PIREPs (UA), and Urgent PIREPs (UUA), for Service A:

**1.** A PIREP appended to an hourly report:

(a) Polled Circuit (A1 scan).

≡<V<<VDCA>(SA Report)/>UA>/OV DCA275020 1840 FL020 /TP PA30 /SK 035 BKN

120 6∨

(b) Nonpolled Circuit.

ZCZC<≡

DCA(SA REPORT)/>UA>

/OV DCA 275020 1840 FL020 /TP PA30 /SK 035. BKN

120<4≡NNNN6∨

**Note.—** Only stations authorized will enter SA Report on nonpolled circuits.

**2.** An Urgent PIREP (UUA).

a. Polled Circuit using "circuit break" procedure:

≡<∨<<∨OKC>UUA><4≡

UUA /OV OKC310010 1745 FL010 /TP BE33 /RM TORNADO TOUCHING SFC MOVG NNE4≡6∨

b. Nonpolled Circuit.

ZCZC<≡

OKC UUA /OV OKC310010 7145 FL010 /TP BE33 /RM TORNADO TOUCHING SFC MOVG NNE<4≡

NNNN6∨

**3.** Individual PIREP (UA)

a. Polled Circuit entered in A2 or A3 scan.

≡<∨<<∨MKC>UA><4≡

UA /OV MKC 1410 FL250 /TP B727 /TB LGT-MDT

CAT4≡6∨

b. Nonpolled Circuit.

ZCZC<≡

MKC UA /OV MKC 1410 FL250 /TP B727 /TB LGT-MDT-CAT

<4≡

NNNN6∨

**4.** Multiple PIREPs from same station.

a. Polled Circuit entered in A2 or A3 scan.

≡<∨<<∨DCA>UA><4≡

UA /OV DCA (text)<≡

UA /OV DCA350015 (text)4≡6∨

b.

ZCZC<≡

DCA UA /OV DCA (text)<≡

DCA UA /OV DCA350015> (text)<4≡

NNNN6∨

**5.** Multiple PIREPs for different locations entered by one station.

a. Polled Circuit entered in A2 or A3 scan.

≡<∨<<∨DCA>UA><4≡

DCA UA /OV DCA (text)4≡<<∨

MGW UA /OV MGW (text) 4≡6∨

**Note.—** Stations may also use the non-WMO Z format (handbook 7330.7-22) for entries of multiple PIREPs for different locations entered on A2 or A3 scan.

b. Nonpolled Circuit.

ZCZC<≡

DCA UA /OV DCA (text)4≡<<∨

MGW UA /OV MGW (text) <4≡

NNNN6∨

**Note.—** Portions underlined in examples are transmitted by WMSC during collection.

c. Prepare corrections to PIREPs that have previously been disseminated as follows:

**Examples.—**

ABC UA COR /OV MRB 345030 1645 FL160

/TP MO21 /SK OVC 155

ABC UUA COR /OV DEF 010005 1810 FL010

/TP PARO /RM TORNADO TOUCHING SFC MOVG NE

## 9-25. PIREP STATION SUMMARY

(a) Prepare PIREPs by routes if possible, from the reported location to an adjacent location. Start a multiple PIREP transmission with the most northerly route and progress clockwise. Place each PIREP on a separate line.

**Examples.—**

UA /OV MRB 045030 1645 FL060

/TP MO21 /SK OVC 055

UA /OV MRB-DCA 1630 FL090

/TP PA24 /RM BTWN LYRS 090

UA /OV MRB-EKN 1640 FL060

/TP BE50 /SK BKN 040 /RM

RDGS OBSCD.

**b.** Whenever possible include base, tops, and amounts of each sky cover.

## 9-26. PIREP SUMMARY (UB)

**a.** PIREPS collected from Service A are forwarded by the WMSC to Suitland where they are compiled by computer into summaries by States. The summaries are transmitted back to the WMSC as collectives between hour plus 25 and hour plus 31 and also between plus 46 and hour plus 52 where they are available for Request/Reply retrieval using the RQ format.

**b.** PIREP summaries are not recommended for briefing pilots. These reports contain data already disseminated to Service A area circuits as individual PIREPs. Summaries are prepared by the NWS for forecasters and are held in WMSC storage for 3 hours.

## 9-27. thru 9-29. RESERVED

# Section 3. RADAR WEATHER REPORT (SD)

## 9-30. GENERAL

**a.** Individual radar weather reports, identified as SD, are collected by the National Meteorological Center (NMC) Suitland, Maryland. These reports are entered by Weather Service Offices on the Radar Report and Warning Coordination (RAWARC) circuits. NMC also collects radar report bulletins from military reporting locations and Canada.

**b.** When normal entry is not possible, SD reports can be entered on Service A circuits upon request by National Weather Service RAWARC entry stations.

## 9-31. SCHEDULE

Radar weather reports are transmitted on Service A by WMSC at H+56 to H+00 each hour. These reports are not scheduled transmissions but are given priority handling during this four minute time frame.

## 9-32. DISTRIBUTION

**a.** Radar weather reports are sent to WMSC by NMC each hour for distribution to area circuits. These reports are received on an unscheduled basis and can be expected to appear during any unscheduled distribution period on area circuits.

**b.** Each individual WMSC circuit receives a unique collection based upon their requirements. Circuit distribution lists are filed at circuit control facilities. FAAH 7110.80, chapter 6 outlines all reports available in the WMSC data base.

## 9-33. thru 9-39. RESERVED

## Section 4. WINDS AND TEMPERATURE ALOFT FORECAST (FD)

### 9-40. GENERAL

Winds and Temperature Aloft Forecasts (FD) are computer-prepared and issued by the National Meteorological Center (NMC) at Suitland, Maryland. The forecasts are valid 6 (FD1/8), 12(FD2/9) and 24 (FD3/10) hours after the observation date times of 0000Z and 1200Z upon which they are based. An unscheduled amendment to an FD may be prepared and issued by a WSFO.

### 9-41. LEVELS FORECAST

Dependent upon station elevation, FD1/2/3 wind forecasts are issued for the following levels: 3, 6, 9, 12, 18, 24, 30, 34, and 39 thousand foot levels. The first level for which a wind forecast is issued is 1500 feet or more above the station elevation. Temperature is forecast for all wind levels, except the 3,000 foot level, that are 2,500 feet or more above the station. The minus signs are deleted preceding the temperatures at the 30, 34, and 39 thousand foot levels. FD 8/9/10 are for the 45,000 and 53,000 foot levels They are not normally disseminated on Service A, but are available on request reply.

### 9-42. SCHEDULES

| *Type* | *Base Data Time* | *Valid for* | *For use (period)* |
|---|---|---|---|
| FD1/8 | 000Z | 0600Z | 0500-0900Z |
| FD2/9 | 0000Z | 1200Z | 0900-1800Z |
| FD3/10 | 0000Z | 0000Z | 1800-0500Z |
| FD1/8 | 1200Z | 1800Z | 1700-2100Z |
| FD2/9 | 1200Z | 0000Z | 2100-0600Z |
| FD3/10 | 1200Z | 1200Z | 0600-1700Z |

### 9-43. DISTRIBUTION

All FDs are transmitted to the WMSC by NMC. Distribution by the WMSC is accomplished in accordance with established program requirements.

**a.** The following example, typical of distribution in the northeast U.S., illustrates the manner in which FDs are relayed by the WMSC to different categories of circuits.

≡<V<<VWBC>FD1<≡(SOM non-WSFO circuits)

OR

ZC2C<≡
WBC>FD1>091820<≡(SOM WSFO circuits)
DATA>BASE>0912002<≡
VALID 1018002 FOR USE 1600-21002. TEMPS NEG ABV 2400<≡
FT 3000 6000 9000 12000 18000 24000 30000 34000 39000<≡

ALB..............<≡
BOS..............<≡
EMI..............<≡
JFK..............<≡
MLT..............<≡
PLB..............<≡
PSB..........<4≡6V(EOM non-WSFO circuits)

NNNN6V (EOM WSFO circuits)

**b.** An amended FD is distributed to the same circuits as the original FD and shall be prepared by a WSFO. Since the FD is a replaceable product, amended entries have to be complete, i.e., consist of both the amended and non-amended levels. The format is shown in the following example:

(BOS, with responsibility for MLT, is the transmitting WSFO)

ZCZC<≡
MLT>FD1>010620>AMD<≡
DATA BASE 010000Z<≡
VALID010600Z<≡
FT 3000 6000 9000 12000 18000 24000 30000 34000 39000
MLT>(text)<<4≡
NNNN6V

### 9-44. thru 9-49. RESERVED

## Section 5. AVIATION TERMINAL FORECAST (FT)

### 9-50. GENERAL

24 hour Terminal Forecasts (FT) for selected U.S. terminals are prepared by National Weather Service Forecast offices and forwarded to the WMSC for distribution. Similar forecasts for the U.S. Military, Canada and Mexico are sent to WMSC from the National Meteorological Center (NMC) and Air Weather Service (AWS) for distribution to area circuits.

### 9-51. TERMINAL FORECAST SCHEDULES

a. 48 contiguous states:

| Time Zone | UTC | Validity | Outlook |
|---|---|---|---|
| Eastern | 0940 | 10Z-04Z | 04Z-10Z |
| Central | 0940 | 10Z-04Z | 04Z-10Z |
| Mountain | 0940 | 10Z-04Z | 04Z-10Z |
| Pacific | 0940 | 10Z-04Z | 04Z-10Z |
| Eastern | 1440 | 15Z-09Z | 09Z-15Z |
| Central | 1440 | 15Z-09Z | 09Z-15Z |
| Mountain | 1540 | 16Z-10Z | 10Z-16Z |
| Pacific | 1540 | 16Z-10Z | 10Z-16Z |
| Eastern | 2140 | 22Z-16Z | 16Z-22Z |
| Central | 2140 | 22Z-16Z | 16Z-22Z |
| Mountain | 2240 | 23Z-17Z | 17Z-23Z |
| Pacific | 2240 | 23Z-17Z | 17Z-23Z |

b. Alaska:

| Area | UTC | Validity |
|---|---|---|
| Southeastern | 0340 | 04Z-04Z |
| | 1040 | 11Z-11Z |
| | 1440 | 15Z-15Z |
| | 2040 | 21Z-21Z |
| Remainder | 0340 | 04Z-04Z |
| | 1040 | 11Z-11Z |
| | 1540 | 16Z-16Z |
| | 2040 | 21Z-21Z |

### 9-52. DISTRIBUTION

Distribution of Aviation Terminal Forecasts (FT) are made by WMSC in accordance with a predetermined list for each circuit based upon intracircuit coordinated requirements. A detailed listing of all FT reporting locations are outlined in 7110.80 chapter 6. WSFOs and the terminals for which they forecast are listed in the National Weather Service Operations Manual (WSOM) Chapter D-21.

### 9-53. thru 9-59. RESERVED

# Section 6. AVIATION AREA FORECASTS (FA)

## 9-60. GENERAL

**a.** Aviation Area Forecasts (FA) are available through the WMSC and provide an overview of weather conditions which could impact aviation operations. FA's are issued by the National Aviation Weather Advisory Unit in Kansas City, MO., for the conterminous U.S. land and coastal waters by areas (Pacific Coast, Rocky Mountain, North-Central U.S., South-Central U.S., Northeast U.S., Southeast U.S.). The areas are delineated along state boundaries and are specified in the National Weather Service (NWS) Operations Manual, Chapter D-20. The FA's for Alaska and Hawaii are issued by the Weather Service Forecast Offices (WSFO) located in Anchorage, Fairbanks and Juneau in Alaska and Honolulu, Hawaii. The geographical areas of coverage for the appropriate WSFO's are specified in Chapter D-20 of the NWS Operations Manual. (Canadian and Mexican FA's are also available through the WMSC as outlined in 7110.80 chapter 6.)

**b.** FA's consist of five sections with each section being transmitted with a unique communications header. This allows each section to be replaced, when needed, instead of amending or correcting the affected FA, to provide a current and complete area forecast. In-flight advisories (including Convective SIGMETs) amend the FA, however, when necessary, the appropriate section of the FA will be replaced by the issuing NWS office. The five FA sections and their communications headers are as follows (iii denotes the FA location identifier, e.g., ANC, CHI, etc.):

1. *iii*H — Hazards/Flight Precautions
2. *iii*S — Synopsis
3. *iii*I — Icing and Freezing Level
4. *iii*T — Turbulence
5. *iii*C — Significant Clouds and Weather

**c.** The Significant Clouds and Weather portion, Section 5, contains an FA outlook pertaining to conditions expected for an additional 6 hour period. The outlook is categorical, as indicated in the following table:

| Ceiling | Visibility |
|---|---|
| LIFR<500 | and/or< |
| IFR>500 — <1000 | and/or>1 — <3 |
| MVFR>1000 — <3000 | and/or>3 — <5 |
| VFR>3000 | and >5 |

< — less than
> — greater than
< — equal to or less than
> — equal to or greater than

## 9-61. AVIATION AREA FORECAST (FA) SCHEDULE

**a.** FA's are prepared 3 times a day in the contiguous 48 states and Alaska, and 4 times a day in Hawaii. The scheduled transmission times in the contiguous U.S. are as follows:

| | *BOS and MIA Areas* | *CHI and DFW Areas* | *SFO and SLC Areas* |
|---|---|---|---|
| 1st issuance | 0840Z | 1040Z | 1140Z |
| 2nd issuance | 1740Z | 1840Z | 1940Z |
| 3rd issuance | 0040Z | 0140Z | 0240Z |

**b.** The Alaska and Pacific NWS Regional Headquarters have authority to schedule FA's to meet user requirements and are issued at the following times:

| | *NC and FAI* | *JNU* | *HNL* |
|---|---|---|---|
| 1st issuance | 0640Z | 0640Z | 0340Z |
| 2nd issuance | 1440Z | 1340Z | 0940Z |
| 3rd issuance | 2240Z | 2240Z | 1540Z |
| 4th issuance | | | 2140Z |

## 9-62. DISTRIBUTION

Distribution of Aviation Area Forecast (FA) is made by WMSC in accordance with a predetermined list for each circuit based upon intracircuit coordinated requirements.

## 9-63. thru 9-69. RESERVED

# Section 7. SEVERE WEATHER FORECASTS

## 9-70. GENERAL

Severe Weather Forecasts, Bulletins, Status Reports and Alerts are filed at irregular intervals by the NWS National Severe Storm Forecast Center (NSSFC) at Kansas City, MO and transmitted to WMSC for distribution. The alert (MKC AWW) is a preliminary announcement of forthcoming severe weather watches. Whenever an alert appears on a circuit, stations shall attempt to request the pertinent Severe Weather Watch (MKC WW) from WMSC.

## 9-71. DISTRIBUTION

Upon receipt of MKC AWW alert the WMSC will immediately interrupt the active task on selected Service A circuits and transmit the report. Severe weather status reports are never urgent. They are relayed unscheduled.

## 9-72. SEVERE WEATHER OUTLOOK NARRATIVE (AC)

In addition to Severe Weather Forecast, the Kansas City NSSFC will frequently file for transmission a "Severe Weather Outlook Narrative" which will contain a brief evaluation of present and expected surface and upper air criteria conducive to severe local storms. These are assigned report type "AC" and are relayed the same as MKC WW.

## 9-73. thru 9-79. RESERVED

## Section 8. ABBREVIATED HURRICANE ADVISORIES (WH)

### 9-80. GENERAL

Abbreviated Hurricane Advisories for the Caribbean-Gulf-Atlantic areas will be issued by the WSFO, Miami, whenever a hurricane is located west of 60 degrees W longitude and north of 20 degrees N latitude or west of 55 degrees W longitude and south of 20 degrees N latitude. This abbreviated advisory must be in agreement with the complete advisory and should be limited to a statement of the storms position, expected movement, and wind conditions. These advisories usually are issued at 6-hour intervals at one of the following times: 0500, 1100, 1700, or 2300 Eastern Standard Time. Detailed information will continue to be included in the appropriate Area Forecast (FA) when applicable. When a hurricane is forecast to affect the area within 300 miles of the U.S. Coast (Atlantic, Gulf or West) during the next 24 hours, the Marine/Aviation version of the advisory will be prepared by WSFO, Miami or San Francisco (San Francisco does not issue abbreviated advisories) and transmitted to the WMSC.

### 9-81. EXAMPLE HURRICANE ADVISORY

The following example illustrates the format of a Hurricane Advisory as transmitted on a Forecast Office circuit.

**Example. —**

```
ZCZC<≡
MIA>WH>181010V<≡
HURCN IONE AT 05E CNTRD 29.4N 74.2W OR 400.
NMI<≡
E OF JACKSONVILLE FLA EXPCTD TO MOV N AT
ABT 12 KT MAX<≡
WNDS 110 KT OVR SML AREA NR CNTR AND
HURCN WNDS WITHIN 55/75 NMI. <≡
NNNN6V
```

### 9-82. DISTRIBUTION

Abbreviated Hurricane Advisories are distributed by the WMSC on a priority basis to selected circuits.

### 9-83. thru 9-89. RESERVED

## Section 9. FLIGHT ADVISORIES (SIGMET WS — AIRMET WA — CONVECTIVE SIGMET WST)

### 9-90. GENERAL

Flight Advisories are issued by the National Aviation Weather Advisory Unit in Kansas City for the conterminous U.S. and the appropriate WSFO in Alaska and Hawaii to provide notice of potentially hazardous weather conditions by amending or supplementing portions of the valid area forecast (FA). The report type designator WS for SIGMETs, WST for convective SIGMETs, and WA for AIRMETs is used to effect selective distribution. The text of the message identifies which advisory is being transmitted. SIGMETs are identified with letters "A" (Alpha) through "N" (November) and AIRMETs with letter "O" (Oscar) through "Z" (Zulu). The latest message for each system is kept in the computer's active storage file by the WMSC. WA for 360 minutes, WS for 360 minutes, WST for 45 minutes.

**Note. —** Honolulu WS data is available in Weather Collective format, see **Handbook 7110.80—Appendix F,** WSPA1/2 PHNL.

### 9-91. DISTRIBUTION

SIGMET (WS) and AIRMET (WA) messages are distributed unscheduled to all Service A circuits. Convective SIGMET (WST) is distributed priority scheduled at H+55 each hour by WMSC to all circuits.

### 9-92. thru 9-99. RESERVED

# Section 10. TRANSCRIBED WEATHER BROADCAST (TWEB)

## 9-100. GENERAL

The Transcribed Weather Broadcast (TWEB) and synopsis for selected routes are prepared by National Weather Service Forecast Offices and forwarded to the WMSC for distribution.

TWEB *Schedule*

| Time Zone | UTC | Validity |
|---|---|---|
| Eastern | 1115 | 11Z-23Z |
| Central | 1115 | 11Z-23Z |
| Mountain | 1140 | 12Z-00Z |
| Pacific | 1140 | 12Z-00Z |
| Eastern | 1740 | 18Z-06Z |
| Central | 1740 | 18Z-06Z |
| Mountain | 1840 | 19Z-07Z |
| Pacific | 1840 | 19Z-07Z |
| Eastern | 2315 | 23Z-17Z |
| Central | 2315 | 23Z-17Z |
| Mountain | 0015 | 00Z-18Z |
| Pacific | 0015 | 00Z-18Z |

**a.** The morning and mid-day TWEB and synopsis will be valid for 12 hours. The evening TWEB and synopsis will be valid 18 hours with no outlook.

**b.** Eastern and Central TWEBs shall not be entered prior to H+20 for hours 10, 17 and 22 UTC. Mountain and Pacific TWEBs shall not be entered prior to H+20 for hours 11, 18, and 23 UTC.

## 9-101. CROSS COUNTRY ROUTES

WMSCs storage contains a selection of combined individual route segments that defines cross country routes. These are accessed by using the request list format defined in 7110.80, Chapter 6, Section 2. Section 4 defines the route segment and list number for each cross country route.

## 9-102. COMBINED TWEB ROUTES AND SYNOPSIS

WMSC stores each WSFO TWEB routes and synopsis combined in one list. These lists and their list numbers are defined in 7110.80, Chapter 6, Section 4.

## 9-103. thru 9-109. RESERVED

# Section 11. METEOROLOGICAL IMPACT STATEMENT (MIS)

## 9-110. GENERAL

A meteorological impact statement (MIS) is an unscheduled planning forecast. It is an air traffic oriented forecast intended for Air Route Traffic Control Center (ARTCC), Central Flow Weather Service Unit (CFWSU), Center Flow Control Function (CFCF), and hub terminal air traffic facility specialists responsible for making flow control and flow control related decisions. It enables these specialists to include the impact of expected, specified local and/or national weather conditions in making these decisions.

## 9-111. CRITERIA

**a.** The MIS describes adverse weather conditions which are expected to begin within, generally, 4 to 12 hours after the statements issuance. It can also describe conditions existing when the Central Weather Service Unit (CWSU) begins daily operations, if the existing conditions will continue for at least 3 hours, or it can describe conditions existing at the time a briefing is issued. As a minimum, a MIS will be issued when:

1. Any of the following conditions occur, or are forecast to occur;

(a) conditions meeting convective SIGMET criteria (see the Weather Service Operations Manual (WSOM), Chapter D-22);

(b) moderate or greater icing;

(c) moderate or greater turbulence;

(d) heavy precipitation;

(e) freezing precipitation;

(f) conditions at, or approaching, low IFR (see WSOM, Chapter D-21);

(g) surface winds, including gusts of 30 knots or greater;

(h) low level wind shear (within 2,000 feet of the surface);

(i) volcanic ash, dust storms, or sandstorms; and,

2. The above conditions will, in the forecasters judgment, impact the flow of air traffic within the ARTCC area of responsibility; and,

3. The forecast lead time (the time between the issuance of a MIS and the onset of the phenomenon), in the forecasters judgment, is sufficient to make the issuance of a Center Weather Advisory (CWA) premature, or unnecessary.

**b.** The MIS will describe the location of the phenomenon using ARTCC relevant points of reference, such as VORs, and will include the height, extent, intensity, and movement of the phenomenon. MISs will be numbered sequentially, beginning at midnight local time each day. Forecasters should be aware that the MIS is disseminated and stored as a replaceable product. This means that each MIS issuance must contain all of the pertinent and known details of the conditions meeting MIS issuance criteria, including the continuing conditions described in previously issued MISs.

**c.** The format of the MIS communications header is: (ARTCC designator) MIS (issuance number)(date/time issued in UTC)/(valid until date/time in UTC) (text)

**Example. —**

ZJX MIS 02 111345/120100
SCT LVL 3 AND 4 TSTMS ALG N/S RTES S OF ILM AND E OF SAV/OMN LN DVLPG BY 16Z. MAX TOPS 350/400 ELSW ZJX AREA LVL 3 AND 4 TSTMS FRMG IN SHRT LNS OR CLUSTERS AFT 17Z WITH FEW RCHG LVL 5 AND 6 CELLS MOVG GENLY SEWD 10 KTS CONT THRU 00Z. CONDS LWRG OCNLY TO LIFR IN HVY PCPN AFT 17Z.

**Note. —** The format of the MIS communications header must be followed exactly if the product is to be distributed through LSAS.

## 9-112. DISTRIBUTION

**a.** The MIS will be distributed to ARTCC area supervisors and traffic management coordinators, and will be entered through FAA leased service A systems (LSAS) and other communications media to make it available for dissemination to other FAA and National Weather Service (NWS) facilities, including adjacent CWSUs and locally designated hub terminal facilities. Distribution may be made directly by the CWSU meteorologist or through the weather coordinator position. When a MIS is issued concurrently with a briefing, the MIS will be distributed through those media to facilities, mentioned above, which do not receive a alphanumeric version of the briefings contents.

## 9-113. thru 9-119. RESERVED

## Section 12. CENTER WEATHER ADVISORY (CWA)

### 9-120. GENERAL

A center weather advisory (CWA) is an unscheduled weather advisory. It is issued for the guidance of Air Route Traffic Control Center (ARTCC) personnel, designated FAA facilities, Central Flow Weather Service Unit (CFWSU) meteorologists, and air crews in flight to anticipate, or avoid, adverse weather conditions in terminal and enroute environments.

### 9-121. CRITERIA

**a.** The CWA is not a flight planning document. By nature of its short lead time, it reflects weather conditions in existence at the time of issuance or conditions beginning within the next 2 hours. If conditions are expected to persist beyond the time of the valid period and/or if conditions extend beyond the ARTCC area, statements to this effect should be included in the text. The Central Weather Service Unit (CWSU) will issue a CWA:

1. When necessary as a supplement to an existing SIGMET (including convective SIGMETs), to an existing AIRMET, or to an existing area forecast (FA) section. The issuance of a CWA under these circumstances should be limited to occasions when, in the judgment of the CWSU meteorologist, real time information adequately supports the issuance of a redefining statement update or advanced amendment. Such real time information regarding the phenomenon covered by a National Aviation Weather Advisory Unit (NAWAU) product may be pilot reports, radar satellite, or information from other sources. The purpose of the CWA, under these circumstances, is to improve or to update the definition of the phenomenon in terms of relevance to users in the ARTCC area regarding the phenomenons location, movement, extent and intensity. A CWA, for example, describing an IFR AIRMETs area of low IFR (LIFR) conditions in terms of ARTCC reference points would be a valid redefinition of the location and intensity relevant to the ARTCCs area and would meet documented requirements.

2. When an inflight advisory has not yet been issued but the observed, or expected, weather conditions meet SIGMET or AIRMET criteria, based on current pilot reports and reinforced by other sources of information concerning existing meteorological conditions. In this situation, the CWSU meteorologist should call the appropriate forecaster at the NAWAU or appropriate Alaska Weather Service Forecast Office (WSFO). If the CWSU forecaster determines that it is necessary to issue a CWA to allow lead time while the SIGMET/AIRMET is being prepared, the CWA will be issued and the CWA should indicate that a SIGMET/AIRMET will be issued shortly.

3. The CWSU meteorologist may issue a CWA when observed, or developing weather conditions do not meet SIGMET (including convective SIGMET) or AIRMET criteria but current pilot reports or other weather information sources indicate that an existing, or anticipated, meteorological phenomena will adversely affect the safe flow of air traffic within the ARTCC area of responsibility. In this situation, the data available must be sufficient, in the judgment of the CWSU meteorologist, to support both the issuance of such an advisory and, if necessary, its continuation.

**b.** The CWA will describe the location of the phenomenon using ARTCC relevant points of reference, such as VORs, and will include the height, extent, intensity, and movement of the phenomenon. Each CWA will have a phenomenon number (1 through 6) immediately following the ARTCC identifier in the CWA message heading. A separate phenomenon number will be assigned to each meteorologically distinct condition or group of conditions, such as, jetstream clear air turbulence, or, low IFR/icing conditions northwest of a low pressure center. The use of phenomenon numbers make it possible to store and disseminate up to 6 unrelated CWA conditions with each condition capable of being updated. Forecasters should be aware that the CWA is stored and disseminated as a replaceable product. This means that each subsequent CWA issuance must contain all of the pertinent and known details of the conditions meeting CWA issuance criteria, including the continuing conditions described in the previously issued CWAs. CWAs will also be numbered sequentially, beginning at midnight local time each day. The sequential CWA issuance number will be followed by the related 2 digit, alpha-numeric designator for inflight advisories in effect, if applicable. The CWA communications heading will also contain the CWA date/time of issuance in UTC and the "valid until" date/time in UTC. The difference between these two times will not exceed 2 hours.

**c.** The format of the CWA communications header is: (ARTCC) designator) (phenomenon number) CWA (issuance number)/(if applicable, 2 digit inflight advisory alphanumeric designator) (date/time issued in UTC)/(valid until date/time in UTC)(text).

**Examples. —**

ZOB3 CWA 01 032141/032300
LN LVL 5 AND 6 TSTMS 10S DET TO 40N DJB TO 40E SBN TO 80SE MKG MOVG FROM 2525 3/4 INCH HAIL RPRTD LAST 5 MINS 20 SW YIP. LVL 4 TO 6 TSTMS CONTG DTW AREA BYD 2300 ZKC1 CWA 01/ ALFA 4 121528/121728
NMRS RPTS OF MDT TO SVR ICG 080/090 30 MILE RADIUS OF STL. LTG OR NEG ICG RPTD 040/120 RMNDR OF ZKC AREA AND NE OF AREA.

**Note. —** The format of the CWA communications header must be followed exactly if the product is to be distributed through the LSAS.

## 9-122. DISTRIBUTION

The CWA will be distributed to ARTCC area supervisors and traffic management coordinators, and will be entered through FAA leased service A systems (LSAS) and other communications media to make it available for dissemination to other FAA and National Weather Service (NWS) facilities. Distribution may be made directly by the CWSU meteorologist or through the weather coordinator position.

## 9-123. thru 9-129. RESERVED

# APPENDIX A

# PILOT/CONTROLLER GLOSSARY

## MAY 8, 1986

This Glossary was compiled to promote a common understanding of the terms used in the Air Traffic Control system. It includes those terms which are intended for pilot/controller communications. Those terms most frequently used in pilot/controller communications are printed in ***bold italics***. The definitions are primarily defined in an operational sense applicable to both users and operators of the National Airspace System. Use of the Glossary will preclude any misunderstandings concerning the system's design, function, and purpose.

Because of the international nature of flying, terms used in the "Lexicon," published by the International Civil Aviation Organization (ICAO), are included when they differ from FAA definitions. These terms are *italicized*. For the reader's convenience, there are also cross references to related terms in other parts of the Glossary and to other documents, such as the Federal Aviation Regulations (FAR's) and the Airman's Information Manual (AIM).

This Glossary will be revised as necessary to maintain a common understanding of the system.

**ABBREVIATED IFR FLIGHT PLANS—** An authorization by ATC requiring pilots to submit only that information needed for the purpose of ATC. It includes only a small portion of the usual IFR flight plan information. In certain instances, this may be only aircraft identification, location, and pilot request. Other information may be requested if needed by ATC for separation/control purposes. It is frequently used by aircraft which are airborne and desire an instrument approach or by aircraft which are on the ground and desire a climb to VFR-on-top. (See VFR-ON-TOP) (Refer to AIM)

***ABEAM—*** An aircraft is "abeam" a fix, point, or object when that fix, point, or object is approximately 90 degrees to the right or left of the aircraft track. Abeam indicates a general position rather than a precise point.

***ABORT—*** To terminate a preplanned aircraft maneuver; e.g., an aborted takeoff.

***ACKNOWLEDGE—*** Let me know that you have received my message.

*ICAO—ACKNOWLEDGE—* Let me know that you have received and understood this message.

**ACROBATIC FLIGHT—** An intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration not necessary for normal flight. (Refer to FAR Part 91)

*ICAO—ACROBATIC FLIGHT—*Maneuvers intentionally performed by an aircraft involving an abrupt change in its attitude, an abnormal attitude, or an abnormal variation in speed.

**ADDITIONAL SERVICES—** Advisory information provided by ATC which includes but is not limited to the following:

1. Traffic advisories.
2. Vectors, when requested by the pilot, to assist aircraft receiving traffic advisories to avoid observed traffic.
3. Altitude deviation information of 300 feet or more from an assigned altitude as observed on a verified (reading correctly) automatic altitude readout (Mode C).
4. Advisories that traffic is no longer a factor.
5. Weather and chaff information.
6. Weather assistance.
7. Bird activity information.
8. Holding pattern surveillance.

Additional services are provided to the extent possible contingent only upon the controller's capability to fit them into the performance of higher priority duties and on the basis of limitations of the radar, volume of traffic, frequency congestion, and controller workload. The controller has complete discretion for determining if he is able to provide or continue to provide a service in a particular case. The controller's reason not to provide or continue to provide a service in a particular case is not subject to question by the pilot and need not be made known to him. (See Traffic Advisories) (Refer to AIM)

**ADMINISTRATOR—** The Federal Aviation Administrator or any person to whom he has delegated his authority in the matter concerned.

***ADVISE INTENTIONS—*** Tell me what you plan to do.

**ADVISORY—** Advice and information provided to assist pilots in the safe conduct of flight and aircraft movement. (See Advisory Service)

**ADVISORY FREQUENCY—** The appropriate frequency to be used for Airport Advisory Service. (See Airport Advisory Service and UNICOM) (Refer to Advisory Circular No. 90-42 and AIM)

**ADVISORY SERVICE—** Advice and information provided by a facility to assist pilots in the safe conduct of flight and aircraft movement. (See Airport Advisory Service, Traffic Advisories, Safety Alerts, Additional Services, Radar Advisory, En Route Flight Advisory Service) (Refer to AIM)

**AERIAL REFUELING/IN-FLIGHT REFUELING—** A procedure used by the military to transfer fuel from one aircraft to another during flight. (Refer to VFR/IFR Wall Planning Charts).

**AERODROME—** A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure, and movement of aircraft.

**AERONAUTICAL BEACON—** A visual NAVAID displaying flashes of white and/or colored light to indicate the location of an airport, a heliport, a landmark, a certain point of a Federal airway in mountainous terrain, or an obstruction. (See Airport Rotating Beacon) (Refer to AIM)

**AERONAUTICAL CHART—** A map used in air navigation containing all or part of the following: Topographic features, hazards and obstructions, navigation aids, navigation routes, designated airspace, and airports. Commonly used aeronautical charts are:

1. Sectional Charts—1:500,000—Designed for visual navigation of slow or medium speed aircraft. Topographic information on these charts features the portrayal of relief and a judicious selection of visual check points for VFR flight. Aeronautical information includes visual and radio aids to navigation, airports, controlled airspace, restricted areas, obstructions, and related data.
2. VFR Terminal Area Charts—1:250,000—Depict Terminal Control Area (TCA) airspace which provides for the control or segregation of all the aircraft within the TCA. The chart depicts topographic information and aeronautical information which includes visual and radio aids to navigation, airports, controlled airspace, restricted areas, obstructions, and related data.
3. World Aeronautical Charts (WAC)—1:1,000,000—Provide a standard series of aeronautical charts covering land areas of the world at a size and scale convenient for navigation by moderate speed aircraft. Topographic information includes cities and towns, principal roads, railroads, distinctive landmarks, drainage, and relief. Aeronautical information includes visual and radio aids to navigation, airports, airways, restricted areas, obstructions, and other pertinent data.
4. En Route Low Altitude Charts—Provide aeronautical information for en route instrument navigation (IFR) in the low altitude stratum. Information includes the portrayal of airways, limits of controlled airspace, position identification and frequencies of radio aids, selected airports, minimum en route and minimum obstruction clearance altitudes, airway distances, reporting points, restricted areas, and related data. Area charts, which are a part of this series, furnish terminal data at a larger scale in congested areas.
5. En Route High Altitude Charts—Provide aeronautical information for en route instrument navigation (IFR) in the high altitude stratum. Information includes the portrayal of jet routes, identification and frequencies of radio aids, selected airports, distances, time zones, special use airspace, and related information.
6. Instrument Approach Procedures (IAP) Charts—Portray the aeronautical data which is required to execute an instrument approach to an airport. These charts depict the procedures, including all related data, and the airport diagram. Each procedure is designated for use with a specific type of electronic navigation system including NDB, TACAN, VOR, ILS/MLS, and RNAV. These charts are identified by the type of navigational aid(s) which provide final approach guidance.
7. Standard Instrument Departure (SID) Charts—Designed to expedite clearance delivery and to facilitate transition between takeoff and en route operations. Each SID procedure is presented as a separate chart and may serve a single airport or more than one airport in a given geographical location.
8. Standard Terminal Arrival (STAR) Charts— Designed to expedite air traffic control arrival procedures and to facilitate transition between en route and instrument approach operations. Each STAR procedure is presented as a separate chart and may serve a single airport or more than one airport in a given geographical location.
9. Airport Taxi Charts—Designed to expedite the efficient and safe flow of ground traffic at an airport. These charts are identified by the official airport name; e.g., Washington National Airport.

*ICAO—AERONAUTICAL CHART*—A representation of a portion of the earth, its culture and relief, specifically designated to meet the requirements of air navigation.

***AFFIRMATIVE—*** Yes.

**AIR CARRIER DISTRICT OFFICE/ACDO—** An FAA field office serving an assigned geographical area, staffed with Flight Standards personnel serving the aviation industry and the general public on matters related to the certification and operation of scheduled air carriers and other large aircraft operations.

**AIRCRAFT—** Device/s that are used or intended to be used for flight in the air, and when used in air traffic control terminology, may include the flight crew.

*ICAO-AIRCRAFT*—Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

**AIRCRAFT APPROACH CATEGORY—** A grouping of aircraft based on a speed of 1.3 times the stall speed in the landing configuration at maximum gross landing weight. An aircraft shall fit in only one category. If it is necessary to maneuver at speeds in excess of the upper limit of a speed range for a category, the minimums for the next higher category should be used. For example, an aircraft which falls in Category A, but is circling to land at a speed in excess of 91 knots, should use the approach Category B minimums when circling to land. The categories are as follows:

1. Category A—Speed less than 91 knots.
2. Category B—Speed 91 knots or more but less than 121 knots.
3. Category C—Speed 121 knots or more but less than 141 knots.
4. Category D—Speed 141 knots or more but less than 166 knots.
5. Category E—Speed 166 knots or more.

(Refer to FAR Parts 1 and 97)

**AIRCRAFT CLASSES—** For the purposes of Wake Turbulence Separation Minima, ATC classifies aircraft as Heavy, Large, and Small as follows:

1. Heavy—Aircraft capable of takeoff weights of 300,000 pounds or more whether or not they are operating at this weight during a particular phase of flight.
2. Large—Aircraft of more than 12,500 pounds, maximum certificated takeoff weight, up to 300,000 pounds.
3. Small—Aircraft of 12,500 pounds or less maximum certificated takeoff weight. (Refer to AIM)

**AIR DEFENSE EMERGENCY—** A military emergency condition declared by a designated authority. This condition exists when an attack upon the continental U.S., Alaska, Canada, or U.S. installations in Greenland by hostile aircraft or missiles is considered probable, is imminent, or is taking place. (Refer to AIM)

**AIR DEFENSE IDENTIFICATION ZONE/ADIZ—** The area of airspace over land or water, extending upward from the surface, within which the ready identification, the location, and the control of aircraft are required in the interest of national security.

1. Domestic Air Defense Identification Zone— An ADIZ within the United States along an international boundary of the United States.
2. Coastal Air Defense Identification Zone— An ADIZ over the coastal waters of the United States.
3. Distant Early Warning Identification Zone (DEWIZ)— An ADIZ over the coastal waters of the State of Alaska.

ADIZ locations and operating and flight plan requirements for civil aircraft operations are specified in FAR Part 99. (Refer to AIM)

**AIRMAN'S INFORMATION MANUAL/AIM—** A publication containing Basic Flight Information and ATC Procedures designed primarily as a pilot's instructional manual for use in the National Airspace System of the United States.

*ICAO-AERONAUTICAL INFORMATION PUBLICATION*—A publication issued by or with the authority of a state and containing aeronautical information of a lasting character essential to air navigation.

***AIRMET* /WA/AIRMAN'S METEOROLOGICAL INFORMATION—** In-flight weather advisories issued only to amend the area forecast concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment, instrumentation, or pilot qualifications. AIRMET's concern weather of less severity than that covered by SIGMET's or Convective SIGMET's. AIRMET's cover moderate icing, moderate turbulence, sustained winds of 30 knots or more at the surface, widespread areas of ceilings less than 1,000 feet and/or visibility less than 3 miles, and extensive mountain obscurement. (See SIGMET and Convective SIGMET) (Refer to AIM)

**AIR NAVIGATION FACILITY—** Any facility used in, available for use in, or designed for use in, aid of air navigation, including landing areas, lights, any apparatus or equipment for disseminating weather information, for signaling, for radio-directional finding, or for radio or other electrical communication, and any other structure or mechanism having a similar purpose for guiding or controlling flight in the air or the landing and take-off of aircraft. (See Navigational Aid)

**AIRPORT—** An area on land or water that is used or intended to be used for the landing and takeoff of aircraft and includes its buildings and facilities, if any.

**AIRPORT ADVISORY AREA—** The area within ten miles of an airport without a control tower or where the tower is not in operation, and on which a Flight Service Station is located. (See Airport Advisory Service) (Refer to AIM)

**AIRPORT ADVISORY SERVICE/AAS—** A service provided by flight service stations located at airports not serviced by a control tower. This service consists of providing information to arriving and departing aircraft concerning wind direction and speed, favored runway, altimeter setting, pertinent known traffic, pertinent known field conditions, airport taxi routes and traffic patterns, and authorized instrument approach procedures. This information is advisory in nature and does not constitute an ATC clearance. (See Airport Advisory Area)

**AIRPORT ELEVATION/FIELD ELEVATION—** The highest point of an airport's usable runways measured in feet from mean sea level. (See Touchdown Zone Elevation)

*ICAO-AERODROME ELEVATION*—The elevation of the highest point of the landing area.

**AIRPORT/FACILITY DIRECTORY**— A publication designed primarily as a pilot's operational manual containing all airports, seaplane bases, and heliports open to the public including communications data, navigational facilities, and certain special notices and procedures. This publication is issued in seven volumes according to geographical area.

**AIRPORT INFORMATION DESK/AID**— An airport unmanned facility designed for pilot self-service briefing, flight planning, and filing of flight plans. (Refer to AIM)

**AIRPORT LIGHTING**— Various lighting aids that may be installed on an airport. Types of airport lighting include:

1. Approach Light System/ALS—An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams in a directional pattern by which the pilot aligns the aircraft with the extended centerline of the runway on his final approach for landing.

   Condenser-Discharge Sequential Flashing Lights/ Sequenced Flashing Lights may be installed in conjunction with the ALS at some airports. Types of Approach Light Systems are:

   a. ALSF-I—Approach Light System with Sequenced Flashing Lights in ILS Cat-I configuration.
   b. ALSF-II—Approach Light System with Sequenced Flashing Lights in ILS Cat-II configuration.
   c. SSALF—Simplified Short Approach Light System with Sequenced Flashing Lights.
   d. SSALR—Simplified Short Approach Light System with Runway Alignment Indicator Lights.
   e. MALSF—Medium Intensity Approach Light System with Sequenced Flashing Lights.
   f. MALSR—Medium Intensity Approach Light System with Runway Alignment Indicator Lights.
   g. LDIN—Sequenced Flashing Lead-in Lights.
   h. RAIL—Runway Alignment Indicator Lights (Sequenced Flashing Lights which are installed only in combination with other light systems).
   i. ODALS—Omnidirectional Approach Lighting System consists of seven omnidirectional flashing lights located in the approach area of a nonprecision runway. Five lights are located on the runway centerline extended with the first light located 300 feet from the threshold and extending at equal intervals up to 1,500 feet from the threshold. The other two lights are located, one on each side of the runway threshold, at a lateral distance of 40 feet from the runway edge, or 75 feet from the runway edge when installed on a runway equipped with a VASI. (Refer to Order 6850.2A)

2. Runway Lights/Runway Edge Lights—Lights having a prescribed angle of emission used to define the lateral limits of a runway. Runway lights are uniformly spaced at intervals of approximately 200 feet, and the intensity may be controlled or preset.

3. Touchdown Zone Lighting—Two rows of tranverse light bars located symmetrically about the runway centerline normally at 100 foot intervals. The basic system extends 3,000 feet along the runway.

4. Runway Centerline Lighting—Flush centerline lights spaced at 50-foot intervals beginning 75 feet from the landing threshold and extending to within 75 feet of the opposite end of the runway.

5. Threshold Lights—Fixed green lights arranged symmetrically left and right of the runway centerline, identifying the runway threshold.

6. Runway End Identifier Lights/REIL—Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

7. Visual Approach Slope Indicator/VASI— An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is "on path" if he sees red/white, "above path' if white/ white, and "below path" if red/red. Some airports serving large aircraft have three-bar VASIs which provide two visual glide paths to the same runway.

8. Boundary Lights—Lights defining the perimeter of an airport or landing area. (Refer to AIM)

**AIRPORT MARKING AIDS**— Markings used on runway and taxiway surfaces to identify a specific runway, a runway threshold, a centerline, a hold line, etc. A runway should be marked in accordance with its present usage such as:

1. Visual.
2. Nonprecision instrument.
3. Precision instrument. (Refer to AIM)

**AIRPORT RADAR SERVICE AREA / ARSA**— (See Controlled Airspace)

**AIRPORT ROTATING BEACON**— A visual NAVAID operated at many airports. At civil airports, alternating white and green flashes indicate the location of the airport. At military airports, the beacons flash alternately white and green, but are differentiated from civil beacons by dualpeaked (two quick) white flashes between the green flashes. (See Special VFR Operations, Instrument Flight Rules) (Refer to AIM, Rotating Beacons)

*ICAO-AERODROME BEACON*—Aeronautical beacon used to indicate the location of an aerodrome.

**AIRPORT SURFACE DETECTION EQUIPMENT/ ASDE—** Radar equipment specifically designed to detect all principal features on the surface of an airport, including aircraft and vehicular traffic, and to present the entire image on a radar indicator console in the control tower. Used to augment visual observation by tower personnel of aircraft and/or vehicular movements on runways and taxiways.

**AIRPORT SURVEILLANCE RADAR/ASR—** Approach control radar used to detect and display an aircraft's position in the terminal area. ASR provides range and azimuth information but does not provide elevation data. Coverage of the ASR can extend up to 60 miles.

**AIRPORT TRAFFIC AREA—** Unless otherwise specifically designated in FAR Part 93, that airspace within a horizontal radius of 5 statute miles from the geographical center of any airport at which a control tower is operating, extending from the surface up to, but not including, an altitude of 3,000 feet above the elevation of an airport. Unless otherwise authorized or required by ATC, no person may operate an aircraft within an airport traffic area except for the purpose of landing at or taking off from an airport within that area. ATC authorizations may be given as individual approval of specific operations or may be contained in written agreements between airport users and the tower concerned. (Refer to FAR, Parts 1 and 91).

**AIRPORT TRAFFIC CONTROL SERVICE—** A service provided by a control tower for aircraft operating on the movement area and in the vicinity of an airport. (See Movement Area, Tower)

*ICAO-AERODROME CONTROL SERVICE*—Air traffic control service for aerodrome traffic.

**AIR ROUTE SURVEILLANCE RADAR/ARSR—** Air route traffic control center (ARTCC) radar used primarily to detect and display an aircraft's position while en route between terminal areas. The ARSR enables controllers to provide radar air traffic control service when aircraft are within the ARSR coverage. In some instances, ARSR may enable an ARTCC to provide terminal radar services similar to but usually more limited than those provided by a radar approach control.

**AIR ROUTE TRAFFIC CONTROL CENTER/ ARTCC—** A facility established to provide air traffic control service to aircraft operating on IFR flight plans within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft. (See NAS Stage A, En Route Air Traffic Control Service) (Refer to AIM)

**AIRSPEED—** The speed of an aircraft relative to its surrounding air mass. The unqualified term "airspeed' means one of the following:

1. Indicated Airspeed—The speed shown on the aircraft airspeed indicator. This is the speed used in pilot/controller communications under the general term "airspeed." (Refer to FAR Part 1)
2. True Airspeed—The airspeed of an aircraft relative to undisturbed air. Used primarily in flight planning and en route portion of flight. When used in pilot/controller communications, it is referred to as "true airspeed" and not shortened to "airspeed."

**AIRSTART—** The starting of an aircraft engine while the aircraft is airborne, preceded by engine shutdown during training flights or by actual engine failure.

**AIR TAXI—** Used to describe a helicopter/VTOL aircraft movement conducted above the surface but normally not above 100 feet AGL. The aircraft may proceed either via hover taxi or flight at speeds more than 20 knots. The pilot is solely responsible for selecting a safe airspeed/altitude for the operation being conducted. (See Hover Taxi) (Refer to AIM)

**AIR TRAFFIC—** Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

*ICAO—AIR TRAFFIC*—All aircraft in flight or operating on the maneuvering area of an aerodrome.

**AIR TRAFFIC CLEARANCE/ATC CLEARANCE—** An authorization by air traffic control, for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace. (See ATC Instructions)

*ICAO—AIR TRAFFIC CONTROL CLEARANCE*—Authorization for an aircraft to proceed under conditions specified by an air traffic control unit.

**AIR TRAFFIC CONTROL/ATC—** A service operated by appropriate authority to promote the safe, orderly and expeditious flow of air traffic.

*ICAO—AIR TRAFFIC CONTROL SERVICE*—A service provided for the purpose of:

1. Preventing collisions:
   a. Between aircraft, and
   b. On the maneuvering area between aircraft and obstructions, and
2. Expediting and maintaining an orderly flow of air traffic.

**AIR TRAFFIC CONTROL COMMAND CENTER/ ATCCC—** An Air Traffic Operations Service facility consisting of four operational units.

1. Central Flow Control Function/CFCF—Responsible for coordination and approval of all major intercenter flow control restrictions on a system basis in order to obtain maximum utilization of the airspace. (See Fuel Advisory Departure, Quota Flow Control)
2. Central Altitude Reservation Function/CARF—Responsible for coordinating, planning, and approving special user requirements under the Altitude Reservation (ALTRV) concept. (See Altitude Reservation)
3. Airport Reservation Office/ARO—Responsible for approving IFR flights at designated high density traffic airports (John F. Kennedy, LaGuardia, O'Hare, and Washington National) during speci-

fied hours. (Refer to FAR Part 93 and Airport/Facility Directory)

4. ATC Contingency Command Post—A facility which enables the FAA to manage the ATC system when significant portions of the system's capabilities have been lost or are threatened.

**AIR TRAFFIC CONTROL SERVICE—** (See Air Traffic Control)

**AIR TRAFFIC CONTROL SPECIALIST/CONTROLLER—** A person authorized to provide air traffic control service. (See Air Traffic Control, Flight Service Station)

*ICAO—CONTROLLER*—A person authorized to provide air traffic control services.

**AIRWAY BEACON—** Used to mark airway segments in remote mountain areas. The light flashes Morse Code to identify the beacon site. (Refer to AIM)

**AIRWAY/FEDERAL AIRWAY—** A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids. (Refer to FAR Part 71, AIM)

*ICAO-AIRWAY*—A control area or portion thereof established in the form of corridor equipped with radio navigational aids.

**ALERT AREA—** (See Special Use Airspace)

**ALERT NOTICE/ALNOT—** A message sent by a flight service station (FSS) or an air route traffic control center (ARTCC) that requests an extensive communication search for overdue, unreported, or missing aircraft.

**ALPHANUMERIC DISPLAY/DATA BLOCK—** Letters and numerals used to show identification, altitude, beacon code, and other information concerning a target on a radar display. (See Automated Radar Terminal Systems, NAS Stage A)

**ALTERNATE AIRPORT—** An airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.

*ICAO-ALTERNATE AERODROME*—An aerodrome specified in the flight plan to which a flight may proceed when it becomes inadvisable to land at the aerodrome of intended landing.

**ALTIMETER SETTING—** The barometric pressure reading used to adjust a pressure altimeter for variations in existing atmospheric pressure or to the standard altimeter setting (29.92). (Refer to FAR Part 91, AIM)

**ALTITUDE—** The height of a level, point, or object measured in feet Above Ground Level (AGL) or from Mean Sea Level (MSL). (See Flight Level)

1. MSL Altitude—Altitude expressed in feet measured from mean sea level.
2. AGL Altitude—Altitude expressed in feet measured above ground level.
3. Indicated Altitude—The altitude as shown by an altimeter. On a pressure or barometric altimeter it is altitude as shown uncorrected for instrument error and uncompensated for variation from standard atmospheric conditions.

*ICAO-ALTITUDE*—The vertical distance of a level, a point or an object considered as a point, measured from mean sea level.

***ALTITUDE READOUT/AUTOMATIC ALTITUDE REPORT—*** An aircraft's altitude, transmitted via the Mode C transponder feature, that is visually displayed in 100-foot increments on a radar scope having readout capability. (See Automated Radar Terminal Systems, NAS Stage A, Alphanumeric Display) (Refer to AIM)

**ALTITUDE RESERVATION/ALTRV—** Airspace utilization under prescribed conditions normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished. ALTRVs are approved by the appropriate FAA facility. (See Air Traffic Control Command Center)

**ALTITUDE RESTRICTION—** An altitude or altitudes, stated in the order flown, which are to be maintained until reaching a specific point or time. Altitude restrictions may be issued by ATC due to traffic, terrain, or other airspace considerations.

***ALTITUDE RESTRICTIONS ARE CANCELED—*** Adherence to previously imposed altitude restrictions is no longer required during a climb or descent.

**APPROACH CLEARANCE—** Authorization by ATC for a pilot to conduct an instrument approach. The type of instrument approach for which a clearance and other pertinent information is provided in the approach clearance when required. (See Instrument Approach Procedure, Cleared for Approach) (Refer to AIM and FAR Part 91)

**APPROACH CONTROL FACILITY—** A terminal ATC facility that provides approach control service in a terminal area. (See Approach Control Service, Radar Approach Control Facility.

**APPROACH CONTROL SERVICE—** Air traffic control service provided by an approach control facility for arriving and departing VFR/IFR aircraft and, on occasion, en route aircraft. At some airports not served by an approach control facility, the ARTCC provides limited approach control service. (Refer to AIM)

*ICAO—APPROACH CONTROL SERVICE*—Air traffic service for arriving or departing controlled flights.

**APPROACH GATE—** An imaginary point used within ATC as a basis for vectoring aircraft to the final approach course. The gate will be established along the final approach course 1 mile from the outer marker (or the fix used in lieu of the outer marker) on the side away from the airport for precision approaches and 1 mile from the final approach fix on the side away from the airport for nonprecision approaches. In either case when measured along the final approach course, the gate will be no closer than 5 miles from the landing threshold.

**APPROACH LIGHT SYSTEM—** (See Airport Lighting)

**APPROACH SEQUENCE—** The order in which aircraft are positioned while on approach or awaiting approach clearance. (See Landing Sequence)

*ICAO—APPROACH SEQUENCE—*The order in which two or more aircraft are cleared to approach to land at the aerodrome.

***APPROACH SPEED—*** The recommended speed contained in aircraft manuals used by pilots when making an approach to landing. This speed will vary for different segments of an approach as well as for aircraft weight and configuration.

**APRON/RAMP—** A defined area on an airport or heliport intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking, or maintenance. With regard to seaplanes, a ramp is used for access to the apron from the water.

*ICAO—APRON—*A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking or maintenance.

**ARC—** The track over the ground of an aircraft flying at a constant distance from a navigational aid by reference to distance measuring equipment (DME).

**AREA NAVIGATION/RNAV—** A method of navigation that permits aircraft operation on any desired course within the coverage of station-referenced navigation signals or within the limits of a self-contained system capability. Random Area Navigation routes are direct routes, based on area navigation capability, between waypoints defined in terms of latitude/longitude coordinates, degree/distance fixes, or offsets from published or established routes/airways at a specified distance and direction. The major types of equipment are:

1. VORTAC referenced or Course Line Computer (CLC) systems, which account for the greatest number of RNAV units in use. To function, the CLC must be within the service range of a VORTAC.
2. OMEGA/VLF, although two separate systems, can be considered as one operationally. A long-range navigation system based upon Very Low Frequency radio signals transmitted from a total of 17 stations worldwide.
3. Inertial (INS) systems, which are totally self-contained and require no information from external references. They provide aircraft position and navigation information in response to signals resulting from inertial effects on components within the system.
4. MLS Area Navigation (MLS/RNAV), which provides area navigation with reference to an MLS ground facility.

*ICAO—AREA NAVIGATION/RNAV—*A method of navigation which permits aircraft operation on any desired flight path within the coverage of station-referenced navigation aids or within the limits of the capability of self-contained aids or a combination of these.

**ARMY AVIATION FLIGHT INFORMATION BULLETIN/USAFIB—** A bulletin that provides air operation data covering Army, National Guard, and Army Reserve aviation activities.

**ARRESTING SYSTEM—** A safety device consisting of two major components, namely, engaging or catching devices and energy absorption devices for the purpose of arresting both tailhook and/or nontailhook-equipped aircraft. It is used to prevent aircraft from overrunning runways when the aircraft cannot be stopped after landing or during aborted takeoff. Arresting systems have various names; e.g., arresting gear, hook device, wire barrier cable. (See Abort) (Refer to AIM)

**ARRIVAL TIME—** The time an aircraft touches down on arrival.

**ARTCC—** (See Air Route Traffic Control Center)

**ASR APPROACH—** (See Surveillance Approach)

**ATC ADVISES—** Used to prefix a message of noncontrol information when it is relayed to an aircraft by other than an air traffic controller. (See Advisory)

**ATC ASSIGNED AIRSPACE/ATCAA—** Airspace of defined vertical/lateral limits, assigned by ATC, for the purpose of providing air traffic segregation between the specified activities being conducted within the assigned airspace and other IFR air traffic. (See Military Operations Area, Alert Area)

**ATC CLEARANCE—** (See Air Traffic Clearance)

**ATC CLEARS—** Used to prefix an ATC clearance when it is relayed to an aircraft by other than an air traffic controller.

**ATC INSTRUCTIONS—** Directives issued by air traffic control for the purpose of requiring a pilot to take specific actions; e.g., "Turn left heading two five zero," "Go around," "Clear the runway." (Refer to FAR Part 91)

**ATCRBS—** (See Radar)

**ATC REQUESTS—** Used to prefix an ATC request when it is relayed to an aircraft by other than an air traffic controller.

**AUTOMATED RADAR TERMINAL SYSTEMS/ARTS—** The generic term for the ultimate in functional capability afforded by several automation systems. Each differs in functional capabilities and equipment. ARTS plus a suffix roman numeral denotes a specific system. A following letter indicates a major modification to that system. In general, an ARTS displays for the terminal controller aircraft identification, flight plan data, other flight associated information; e.g., altitude, speed, and aircraft position symbols in conjunction with his radar presentation. Normal radar co-exists with the alphanumeric display. In addition to enhancing visualization of the air traffic situation, ARTS facilitate intra/inter-facility transfer and coordination of flight information. These capabilities are enabled by specially designed computers and subsystems tailored to the radar and communications equipments and operational requirements of each automated facility. Modular design permits adoption of improvements in computer software and electronic technologies as they become available while retaining the characteristics unique to each system.

1. ARTS II—A programmable nontracking, computer- aided display subsystem capable of modular expansion. ARTS II systems provide a level of automated air traffic control capability at terminals having low to medium activity. Flight identification and altitude may be associated with the display of secondary radar targets. Also, flight plan information may be exchanged between the terminal and ARTCC.
2. ARTS III—The Beacon Tracking Level (BTL) of the modular programmable automated radar terminal system in use at medium to high activity terminals. ARTS III detects, tracks, and predicts secondary radar-derived aircraft targets. These are displayed by means of computer-generated symbols and alphanumeric characters depicting flight identification, aircraft altitude, ground speed, and flight plan data. Although it does not track primary targets, they are displayed coincident with the secondary radar as well as the symbols and alphanumerics. The system has the capability of communicating with ARTCC's and other ARTS III facilities.
3. ARTS IIIA—The Radar Tracking and Beacon Tracking Level (RT&BTL) of the modular, programmable automated radar terminal system. ARTS IIIA detects, tracks, and predicts primary as well as secondary radar-derived aircraft targets. This more sophisticated computer-driven system upgrades the existing ARTS III system by providing improved tracking, continuous data recording, and fail-soft capabilities.

**AUTOMATIC ALTITUDE REPORTING—** That function of a transponder which responds to Mode C interrogations by transmitting the aircraft's altitude in 100-foot increments.

**AUTOMATIC CARRIER LANDING SYSTEM/ACLS—** U.S. Navy final approach equipment consisting of precision tracking radar coupled to a computer data link to provide continuous information to the aircraft, monitoring capability to the pilot, and a backup approach system.

**AUTOMATIC DIRECTION FINDER/ADF—** An aircraft radio navigation system which senses and indicates the direction to a L/MF nondirectional radio beacon (NDB) ground transmitter. Direction is indicated to the pilot as a magnetic bearing or as a relative bearing to the longitudinal axis of the aircraft depending on the type of indicator installed in the aircraft. In certain applications, such as military, ADF operations may be based on airborne and ground transmitters in the VHF/UHF frequency spectrum. (See Bearing, Nondirectional Beacon)

**AUTOMATIC TERMINAL INFORMATION SERVICE/ATIS—** The continuous broadcast of recorded noncontrol information in selected terminal areas. Its purpose is to improve controller effectiveness and to relieve frequency congestion by automating the repetitive transmission of essential but routine information; e.g.,"Los Angeles information Alfa. One three zero zero Coordinated Universal Time. Weather, measured ceiling two thousand overcast, visibility three, haze, smoke, temperature seven one, dew point five seven, wind two five zero at five, altimeter two niner niner six. I-L-S Runway Two Five Left approach in use, Runway Two Five Right closed, advise you have Alfa." (Refer to AIM)

*ICAO—AUTOMATIC TERMINAL INFORMATION SERVICE—*The provision of current, routine information to arriving and departing aircraft by means of continuous and repetitive broadcasts throughout the day or a specified portion of the day.

**AUTOROTATION—** A rotorcraft flight condition in which the lifting rotor is driven entirely by action of the air when the rotorcraft is in motion.

1. Autorotative Landing/Touchdown Autorotation—Used by a pilot to indicate that he will be landing without applying power to the rotor.
2. Low Level Autorotation—Commences at an altitude well below the traffic pattern, usually below 100 feet AGL and is used primarily for tactical military training.
3. 180 degrees Autorotation—Initiated from a downwind heading and is commenced well inside the normal traffic pattern. "Go around" may not be possible during the latter part of this maneuver.

**AVIATION WEATHER SERVICE—** A service provided by the National Weather Service (NWS) and FAA which collects and disseminates pertinent weather information for pilots, aircraft operators, and ATC. Available aviation weather reports and forecasts are displayed at each NWS office and FAA FSS. (See En Route Flight Advisory Service, Transcribed Weather Broadcast, Weather Advisory, Pilots Automatic Telephone Weather Answering Service) (Refer to AIM)

**AZIMUTH, MLS—**A magnetic bearing extending from an MLS navigation facility. Note: azimuth bearings are described as magnetic and are referred to as "azimuth" in radio telephone communications.

**BASE LEG—** (See Traffic Pattern)

**BEACON—** (See Radar, Nondirectional Beacon, Marker Beacon, Airport Rotating Beacon, Aeronautical Beacon, Airway Beacon))

**BEARING—** The horizontal direction to or from any point, usually measured clockwise from true north, magnetic north, or some other reference point through 360 degrees. (See Nondirectional Beacon)

**BELOW MINIMUMS—** Weather conditions below the minimums prescribed by regulation for the particular action involved; e.g., landing minimums, takeoff minimums.

**BLAST FENCE—** A barrier that is used to divert or dissipate jet or propeller blast.

**BLIND SPEED—** The rate of departure or closing of a target relative to the radar antenna at which cancellation of the primary radar target by moving target indicator (MTI) circuits in the radar equipment causes a reduction or complete loss of signal.

*ICAO—BLIND VELOCITY—*The radial velocity of a moving target such that the target is not seen on primary radars fitted with certain forms of fixed echo suppression.

**BLIND SPOT/BLIND ZONE—** An area from which radio transmissions and/or radar echoes cannot be received. The term is also used to describe portions of the airport not visible from the control tower.

**BOUNDARY LIGHTS—** (See Airport Lighting)

***BRAKING ACTION (GOOD, FAIR, POOR, OR NIL)—*** A report of conditions on the airport movement area providing a pilot with a degree/quality of braking that he might expect. Braking action is reported in terms of good, fair, poor, or nil. (See Runway Condition Reading)

**BRAKING ACTION ADVISORIES—** When tower controllers have received runway braking action reports which include the terms "poor" or "nil," or whenever weather conditions are conducive to deteriorating or rapidly changing runway braking conditions, the tower will include on the ATIS broadcast the statement, "BRAKING ACTION ADVISORIES ARE IN EFFECT." During the time Braking Action Advisories are in effect, ATC will issue the latest braking action report for the runway in use to each arriving and departing aircraft. Pilots should be prepared for deteriorating braking conditions and should request current runway condition information if not volunteered by controllers. Pilots should also be prepared to provide a descriptive runway condition report to controllers after landing.

**BROADCAST—** Transmission of information for which an acknowledgement is not expected.

*ICAO—BROADCAST—*A transmission of information relating to air navigation that is not addressed to a specific station or stations.

**CALL UP—** Initial voice contact between a facility and an aircraft, using the identification of the unit being called and the unit initiating the call. (Refer to AIM)

**CARDINAL ALTITUDES OR FLIGHT LEVELS—** "Odd" or "Even" thousand-foot altitudes or flight levels; e.g., 5,000, 6,000, 7,000, FL 250, FL 260, FL 270. (See Altitude, Flight Levels)

**CEILING—** The heights above the earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as "broken," "overcast," or "obscuration," and not classified as "thin" or "partial".

*ICAO—CEILING—*The height above the ground or water of the base of the lowest layer of cloud below 6,000 meters (20,000 feet) covering more than half the sky.

**CELESTIAL NAVIGATION—** The determination of geographical position by reference to celestial bodies. Normally used in aviation as a secondary means of position determination.

**CENTER—** (See Air Route Traffic Control Center)

**CENTER'S AREA—** The specified airspace within which an air route traffic control center (ARTCC) provides air traffic control and advisory service. (See Air Route Traffic Control Center) (Refer to AIM)

**CENTER WEATHER ADVISORY/CWA—** An unscheduled weather advisory issued by Center Weather Service Unit meteorologists for ATC use to alert pilots of existing or anticipated adverse weather conditions within the next 2 hours. A CWA may modify or redefine a SIGMET.

**CHAFF—** Thin, narrow metallic reflectors of various lengths and frequency responses, used to reflect radar energy. These reflectors when dropped from aircraft and allowed to drift downward result in large targets on the radar display.

**CHARTED VISUAL FLIGHT PROCEDURE (CVFP) APPROACH—** An approach wherein a radar-controlled aircraft on an IFR flight plan, operating in VFR conditions and having an ATC authorization, may proceed to the airport of intended landing via visual landmarks and altitudes depicted on a charted visual flight procedure.

***CHASE/CHASE AIRCRAFT—*** An aircraft flown in proximity to another aircraft normally to observe its performance during training or testing.

**CIRCLE-TO-LAND MANEUVER/CIRCLING MANEUVER—** A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or is not desirable. This maneuver is made only after ATC authorization has been obtained and the pilot has established required visual reference to the airport (See Circle to Runway, Landing Minimums) (Refer to AIM)

***CIRCLE TO RUNWAY (RUNWAY NUMBERED)—*** Used by ATC to inform the pilot that he must circle to land because the runway in use is other than the runway aligned with the instrument approach procedure. When the direction of the circling maneuver in relation to the airport/runway is required, the controller will state the direction (eight cardinal compass points) and specify a left or right downwind or base leg as appropriate; e.g., "Cleared VOR Runway Three Six Approach circle to Runway Two Two," or "Circle northwest of the airport for a right downwind to Runway Two Two." (See Circle-to-Land Maneuver, Landing Minimums) (Refer to AIM)

***CIRCLING APPROACH—*** (See Circle-to-Land Maneuver)

**CIRCLING MINIMA—** (See Landing Minimums)

**CLEAR-AIR TURBULENCE/CAT—** Turbulence encountered in air where no clouds are present. This term is commonly applied to high-level turbulence associated with wind shear. CAT is often encountered in the vicinity of the jet stream. (See Wind Shear, Jet Stream)

***CLEARANCE—*** (See Air Traffic Clearance)

**CLEARANCE LIMIT—** The fix, point, or location to which an aircraft is cleared when issued an air traffic clearance.

*ICAO—CLEARANCE LIMIT—*The point of which an aircraft is granted an air traffic control clearance.

***CLEARANCE VOID IF NOT OFF BY (TIME)—*** Used by ATC to advise an aircraft that the departure clearance is automatically cancelled if takeoff is not made prior to a specified time. The pilot must obtain a new clearance or cancel his IFR flight plan if not off by the specified time.

*ICAO—CLEARANCE VOID TIME—* A time specified by an air traffic control unit at which a clearance ceases to be valid unless the aircraft concerned has already taken action to comply therewith.

***CLEARED AS FILED—*** Means the aircraft is cleared to proceed in accordance with the route of flight filed in the flight plan. This clearance does not include the altitude, SID, or SID Transition. (See Request Full Route Clearance) (Refer to AIM)

***CLEARED FOR (Type Of) APPROACH—*** ATC authorization for an aircraft to execute a specific instrument approach procedure to an airport; e.g., "Cleared for ILS Runway Three Six Approach." (See Instrument Approach Procedure, Approach Clearance) (Refer to AIM, FAR Part 91)

***CLEARED FOR APPROACH—*** ATC authorization for an aircraft to execute any standard or special instrument approach procedure for that airport. Normally, an aircraft will be cleared for a specific instrument approach procedure. (See Instrument Approach Procedure, Cleared for (Type of) Approach) (Refer to AIM, FAR Part 91)

***CLEARED FOR TAKEOFF—*** ATC authorization for an aircraft to depart. It is predicated on known traffic and known physical airport conditions.

***CLEARED FOR THE OPTION—*** ATC authorization for an aircraft to make a touch-and-go, low approach, missed approach, stop and go, or full stop landing at the discretion of the pilot. It is normally used in training so that an instructor can evaluate a student's performance under changing situations. (See Option Approach) (Refer to AIM)

***CLEARED THROUGH—*** ATC authorization for an aircraft to make intermediate stops at specified airports without refiling a flight plan while en route to the clearance limit.

***CLEARED TO LAND—*** ATC authorization for an aircraft to land. It is predicated on known traffic and known physical airport conditions.

**CLEARWAY—** An area beyond the takeoff runway under the control of airport authorities within which terrain or fixed obstacles may not extend above specified limits. These areas may be required for certain turbine-powered operations and the size and upward slope of the clearway will differ depending on when the aircraft was certificated. (Refer to FAR Part 1)

**CLIMBOUT—** That portion of flight operation between takeoff and the initial cruising altitude.

***CLIMB TO VFR—*** ATC authorization for an aircraft to climb to VFR conditions within a control zone when the only weather limitation is restricted visibility. The aircraft must remain clear of clouds while climbing to VFR. (See Special VFR) (Refer to AIM)

**CLOSED RUNWAY—** A runway that is unusable for aircraft operations. Only the airport management/military operations office can close a runway.

**CLOSED TRAFFIC—** Successive operations involving takeoffs and landings or low approaches where the aircraft does not exit the traffic pattern.

**CLUTTER—** In radar operations, clutter refers to the reception and visual display of radar returns caused by precipitation, chaff, terrain, numerous aircraft targets, or other phenomena. Such returns may limit or preclude ATC from providing services based on radar. (See Ground Clutter, Chaff, Precipitation, Target)

*ICAO—Radar Clutter—*The visual indication on a radar display of unwanted signals.

**COASTAL FIX—** A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

**CODES/TRANSPONDER CODES—** The number assigned to a particular multiple pulse reply signal transmitted by a transponder. (See Discrete Code)

**COMBINED CENTER-RAPCON/CERAP—** An air traffic facility which combines the functions of an ARTCC and a radar approach control facility. (See Air Route Traffic Control Center/ARTCC, Radar Approach Control Facility)

**COMMON ROUTE/COMMON PORTION—** That segment of a North American Route between the inland navigation facility and the coastal fix.

**COMMON TRAFFIC ADVISORY FREQUENCY/CTAF—** A frequency designed for the purpose of carrying out airport advisory practices while operating to or from an uncontrolled airport. The CTAF may be a UNICOM, Multicom, FSS, or tower frequency and is identified in appropriate aeronautical publications. (Refer to AC—90-42C)

**COMPASS LOCATOR—** A low power, low or medium frequency (L/MF) radio beacon installed at the site of the outer or middle marker of an instrument landing system (ILS). It can be used for navigation at distances of approximately 15 miles or as authorized in the approach procedure.

1. Outer Compass Locator/LOM—A compass locator installed at the site of the outer marker of an instrument landing system. (See Outer Marker)
2. Middle Compass Locator/LMM—A compass locator installed at the site of the middle marker of an instrument landing system. (See Middle Marker)

*ICAO—LOCATOR—*An LM/MF NDB used as an aid to final approach.

**COMPASS ROSE—** A circle, graduated in degrees, printed on some charts or marked on the ground at an airport. It is used as a reference to either true or magnetic direction.

**COMPOSITE FLIGHT PLAN—** A flight plan which specifies VFR operation for one portion of flight and IFR for another portion. It is used primarily in military operations. (Refer to AIM)

**COMPOSITE ROUTE SYSTEM—** An organized oceanic route structure, incorporating reduced lateral spacing between routes, in which composite separation is authorized.

**COMPOSITE SEPARATION—** A method of separating aircraft in a composite route system where, by management of route and altitude assignments, a combination of half the lateral minimum specified for the area concerned and half the vertical minimum is applied.

**COMPULSORY REPORTING POINTS—** Reporting points which must be reported to ATC. They are designated on aeronautical charts by solid triangles or filed in a flight plan as fixes selected to define direct routes. These points are geographical locations which are defined by navigation aids/fixes. Pilots should discontinue position reporting over compulsory reporting points when informed by ATC that their aircraft is in "radar contact."

**CONFLICT ALERT—** A function of certain air traffic control automated systems designed to alert radar controllers to existing or pending situations recognized by the program parameters that require his immediate attention/action.

**CONFLICT RESOLUTION—** The resolution of potential conflictions between IFR aircraft and VFR aircraft that are radar identified and in communication with ATC by ensuring that radar targets do not touch. Pertinent traffic advisories shall be issued when this procedure is applied. Note: This separation procedure will not be provided utilizing fully digitized radar systems. (See Controlled Airspace—Airport Radar Service Area / ARSA, Outer Area)

**CONSOLAN—** A low frequency, long-distance NAVAID used principally for transoceanic navigations.

**CONTACT—**

1. Establish communication with (followed by the name of the facility and, if appropriate, the frequency to be used).
2. A flight condition wherein the pilot ascertains the attitude of his aircraft and navigates by visual reference to the surface. (See Contact Approach, Radar Contact)

***CONTACT APPROACH—*** An approach wherein an aircraft on an IFR flight plan, having an air traffic control authorization, operating clear of clouds with at least 1 mile flight visibility and a reasonable expectation of continuing to the destination airport in those conditions, may deviate from the instrument approach procedure and proceed to the destination airport by visual reference to the surface. This approach will only be authorized when requested by the pilot and the reported ground visibility at the destination airport is at least 1 statute mile. (Refer to AIM)

**CONTERMINOUS U.S.—** The 48 adjoining States and the District of Columbia.

**CONTINENTAL CONTROL AREA—** (See Controlled Airspace)

**CONTINENTAL UNITED STATES—** The 49 States located on the continent of North America and the District of Columbia.

**CONTROL AREA—** (See Controlled Airspace)

**CONTROLLED AIRSPACE—** Airspace designated as a control zone, airport radar service area, terminal control area, transition area, control area, continental control area, and positive control area within which some or all aircraft may be subject to air traffic control. (Refer to AIM, FAR Part 71)

*ICAO—CONTROLLED AIRSPACE*—Airspace of defined dimensions within which air traffic control service is provided to controlled flights.

**Types of U.S. Controlled Airspace:**

1. Control Zone—Controlled airspace which extends upward from the surface of the earth and terminates at the base of the continental control area. Control zones that do not underlie the continental control area have no upper limit. A control zone may include one or more airports and is normally a circular area with a radius of 5 statute miles and any extensions necessary to include instrument approach and departure paths.

*ICAO—Control Zone*—A controlled airspace extending upwards from the surface of the earth to a specified upper limit.

2. Airport Radar Service Area / ARSA—Regulatory airspace surrounding designated airports wherein ATC provides radar vectoring and sequencing on a full-time basis for all IFR and VFR aircraft. The service provided in an ARSA is called ARSA service which includes: IFR/IFR—standard IFR separation; IFR/VFR—traffic advisories and conflict resolution; and VFR/VFR—traffic advisories and, as appropriate, safety alerts. The AIM contains an explanation of ARSA. The ARSA's are depicted on VFR aeronautical charts. (See Conflict Resolution, Outer Area) (Refer to AIM, Airport/Facility Directory, FAR Part 91)
3. Terminal Control Area/TCA—Controlled airspace extending upward from the surface or higher to specified altitudes, within which all aircraft are subject to operating rules and pilot and equipment requirements specified in FAR Part 91. TCA's are depicted on Sectional, World Aeronautical, En Route Low Altitude, DOD FLIP, and TCA charts. (Refer to FAR Part 91, AIM)

*ICAO—Terminal Control Area*—A control area normally established at the confluence of ATS routes in the vicinity of one or more major aerodromes.

4. Transition Area—Controlled airspace extending upward from 700 feet or more above the surface of the earth when designated in conjunction with

an airport for which an approved instrument approach procedure has been prescribed; or from 1,200 feet or more above the surface of the earth when designated in conjunction with airway route structures or segments. Unless otherwise specified, transition areas terminate at the base of the overlying controlled airspace. Transition areas are designed to contain IFR operations in controlled airspace during portions of the terminal operation and while transiting between the terminal and en route environment.

5. Control Area—Airspace designated as Colored Federal airways, VOR Federal airways, control areas associated with jet routes outside the continental control area (FAR 71.161), additional control areas (FAR 71.163), control area extensions (FAR 71.165), and area low routes. Control areas do not include the continental control area, but unless otherwise designated, they do include the airspace between a segment of a main VOR Federal airway and its associated alternate segments with the vertical extent of the area corresponding to the vertical extent of the related segment of the main airway. The vertical extent of the various categories of airspace contained in control areas is defined in FAR Part 71.

*ICAO—Control Area*—A controlled airspace extending upward from a specified limit above the earth.

6. Continental Control Area—The airspace of the 48 contiguous States, the District of Columbia and Alaska, excluding the Alaska peninsula west of Long. 160° 00' 00"W, at and above 14,500 feet MSL, but does not include:
    a. The airspace less than 1,500 feet above the surface of the earth; or
    b. Prohibited and restricted areas, other than the restricted areas listed in FAR Part 71.
7. Positive Control Area/PCA—Airspace designated in FAR, Part 71 within which there is positive control of aircraft. Flight in PCA is normally conducted under instrument flight rules. PCA is designated throughout most of the conterminous United States and its vertical extent is from 18,000 feet MSL to and including flight level 600. In Alaska PCA does not include the airspace less than 1,500 feet above the surface of the earth nor the airspace over the Alaska Peninsula west of longitude 160 degrees West. Rules for operating in PCA are found in FARs 91.97 and 91.24.

**CONTROLLED DEPARTURE TIME (CDT) PROGRAMS—** These programs are the flow control process whereby aircraft are held on the ground at the departure airport when delays are projected to occur in either the en route system or the terminal of intended landing. The purpose of these programs is to reduce congestion in the air traffic system or to limit the duration of airborne holding in the arrival center or terminal area. A CDT is a specific departure slot shown on the flight plan as an expected departure clearance time (EDCT).

**CONTROLLER—** (See Air Traffic Control Specialist)

**CONTROL SECTOR—** An airspace area of defined horizontal and vertical dimensions for which a controller or group of controllers has air traffic control responsibility, normally within an air route traffic control center or an approach control facility. Sectors are established based on predominant traffic flows, altitude strata, and controller workload. Pilot-communications during operations within a sector are normally maintained on discrete frequencies assigned to the sector. (See Discrete Frequency)

**CONTROL SLASH—** A radar beacon slash representing the actual position of the associated aircraft. Normally, the control slash is the one closest to the interrogating radar beacon site. When ARTCC radar is operating in narrowband (digitized) mode, the control slash is converted to a target symbol.

**CONTROL ZONE—** (See Controlled Airspace)

***CONVECTIVE SIGMET*** **/WST/CONVECTIVE SIGNIFICANT METEOROLOGICAL INFORMATION—** A weather advisory concerning convective weather significant to the safety of all aircraft. Convective SIGMET's are issued for tornadoes, lines of thunderstorms, embedded thunderstorms of any intensity level, areas of thunderstorms greater than or equal to VIP level 4 with an areal coverage of 4/10 (40%) or more, and hail 3/4 inch or greater. (See SIGMET, AIRMET) (Refer to AIM)

**COORDINATES—** The intersection of lines of reference, usually expressed in degrees/minutes/seconds of latitude and longitude, used to determine position or location.

**COORDINATION FIX—** The fix in relation to which facilities will handoff, transfer control of an aircraft, or coordinate flight progress data. For terminal facilities, it may also serve as a clearance for arriving aircraft.

**CORRECTION—** An error has been made in the transmission and the correct version follows.

**COURSE—**

1. The intended direction of flight in the horizontal plane measured in degrees from north.
2. The ILS localizer signal pattern usually specified as the front course or the back course.
3. The intended track along a straight, curved, or segmented MLS path.

(See Bearing, Radial, Instrument Landing System, Microwave Landing System)

**CRITICAL ENGINE—** The engine which, upon failure, would most adversely affect the performance or handling qualities of an aircraft.

***CROSS (FIX) AT (ALTITUDE)—*** Used by ATC when a specific altitude restriction at a specified fix is required.

***CROSS (FIX) AT OR ABOVE (ALTITUDE)—*** Used by ATC when an altitude restriction at a specified fix is required. It does not prohibit the aircraft from crossing the fix at a higher altitude than specified; however, the higher altitude may not be one that will violate a succeeding altitude restriction or altitude assignment. (See Altitude Assignment, Altitude Restriction.) (Refer to AIM)

***CROSS (FIX) AT OR BELOW (ALTITUDE)***— Used by ATC when a maximum crossing altitude at a specific fix is required. It does not prohibit the aircraft from crossing the fix at a lower altitude; however, it must be at or above the minimum IFR altitude. (See Minimum IFR Altitude, Altitude Restriction) (Refer to FAR Part 91)

**CROSSWIND—**

1. When used concerning the traffic pattern, the word means "crosswind leg." (See Traffic Pattern)
2. When used concerning wind conditions, the word means a wind not parallel to the runway or the path of an aircraft. (See Crosswind Component)

**CROSSWIND COMPONENT—** The wind component measured in knots at 90 degrees to the longitudinal axis of the runway.

***CRUISE***— Used in an ATC clearance to authorize a pilot to conduct flight at any altitude from the minimum IFR altitude up to and including the altitude specified in the clearance. The pilot may level off at any intermediate altitude within this block of airspace. Climb/descent within the block is to be made at the discretion of the pilot. However, once the pilot starts descent and verbally reports leaving an altitude in the block, he may not return to that altitude without additional ATC clearance. Further, it is approval for the pilot to proceed to and make an approach at destination airport and can be used in conjunction with:

1. An airport clearance limit at locations with a standard/special instrument approach procedure. The FAR's require that if an instrument letdown to an airport is necessary, the pilot shall make the letdown in accordance with a standard/special instrument approach procedure for that airport, or
2. An airport clearance limit at locations that are within/below/outside controlled airspace and without a standard/special instrument approach procedure. Such a clearance is NOT AUTHORIZATION for the pilot to descend under IFR conditions below the applicable minimum IFR altitude nor does it imply that ATC is exercising control over aircraft in uncontrolled airspace; however, it provides a means for the aircraft to proceed to destination airport, descend, and land in accordance with applicable FAR's governing VFR flight operations. Also, this provides search and rescue protection until such time as the IFR flight plan is closed. (See Instrument Approach Procedure)

**CRUISING ALTITUDE/LEVEL—** An altitude or flight level maintained during en route level flight. This is a constant altitude and should not be confused with a cruise clearance. (See Altitude)

*ICAO—CRUISING LEVEL*—A level maintained during a significant portion of a flight.

**DECISION HEIGHT/DH—** With respect to the operation of aircraft, means the height at which a decision must be made during an ILS, MLS, or PAR instrument approach to either continue the approach or to execute a missed approach.

*ICAO—DECISION HEIGHT*—A specified height at which a missed approach must be initiated if the required visual reference to continue the approach to land has not been established.

**DECODER—** The device used to decipher signals received from ATCRBS transponders to effect their display as select codes. (See Codes, Radar)

**DEFENSE VISUAL FLIGHT RULES/DVFR—** Rules applicable to flights within an ADIZ conducted under the visual flight rules in FAR, Part 91. (See Air Defense Identification Zone) (Refer to FAR, Part 99)

**DELAY INDEFINITE (REASON IF KNOWN) EXPECT FURTHER CLEARANCE (TIME)—** Used by ATC to inform a pilot when an accurate estimate of the delay time and the reason for the delay cannot immediately be determined; e.g., a disabled aircraft on the runway, terminal or center area saturation, weather below landing minimums, etc. (See Expect Further Clearance)

**DEPARTURE CONTROL—** A function of an approach control facility providing air traffic control service for departing IFR and, under certain conditions, VFR aircraft. (See Approach Control) (Refer to AIM)

**DEPARTURE TIME—** The time an aircraft becomes airborne.

**DEVIATIONS—**

1. A departure from a current clearance, such as an off course maneuver to avoid weather or turbulence.
2. Where specifically authorized in the FAR's and requested by the pilot, ATC may permit pilots to deviate from certain regulations. (Refer to AIM)

**DF APPROACH PROCEDURE—** Used under emergency conditions where another instrument approach procedure cannot be executed. DF guidance for an instrument approach is given by ATC facilities with DF capability. (See DF Guidance, Direction Finder) (Refer to AIM)

**DF FIX—** The geographical location of an aircraft obtained by one or more direction finders. (See Direction Finder)

**DF GUIDANCE/DF STEER—** Headings provided to aircraft by facilities equipped with direction finding equipment. These headings, if followed, will lead the aircraft to a predetermined point such as the DF station or an airport. DF guidance is given to aircraft in distress or to other aircraft which request the service. Practice DF guidance is provided when workload permits. (See Direction Finder, DF Fix) (Refer to AIM)

***DIRECT***— Straight line flight between two navigational aids, fixes, points, or any combination thereof. When used by pilots in describing off-airway routes, points defining direct route segments become compulsory reporting points unless the aircraft is under radar contact.

**DIRECT ALTITUDE AND IDENTITY READOUT/ DAIR—** The DAIR System is a modification to the AN/TPX-42 Interrogator System. The Navy has two adaptations of the DAIR System— Carrier Air Traffic Control Direct Altitude and Identification Readout System for Aircraft Carriers and Radar Air Traffic Control Facility Direct Altitude and Identity Readout System for land-based terminal operations. The DAIR detects, tracks, and predicts secondary radar aircraft targets. Targets are displayed by means of computer-generated symbols and alphanumeric characters depicting flight identification, altitude, ground speed, and flight plan data. The DAIR System is capable of interfacing with ARTCC's.

**DIRECTION FINDER/DF/UDF/VDF/UVDF—** A radio receiver equipped with a directional sensing antenna used to take bearings on a radio transmitter. Specialized radio direction finders are used in aircraft as air navigation aids. Others are ground-based, primarily to obtain a "fix" on a pilot requesting orientation assistance or to locate downed aircraft. A location "fix" is established by the intersection of two or more bearing lines plotted on a navigational chart using either two separately located Direction Finders to obtain a fix on an aircraft or by a pilot plotting the bearing indications of his DF on two separately located ground-based transmitters, both of which can be identified on his chart. UDF's receive signals in the ultra high frequency radio broadcast band; VDF's in the very high frequency band; and UVDF's in both bands. ATC provides DF service at those air traffic control towers and flight service stations listed in the Airport/Facility Directory and the DOD FLIP IFR En Route Supplement. (See DF Guidance, DF Fix)

**DISCRETE CODE/DISCRETE BEACON CODE—** As used in the Air Traffic Control Radar Beacon System (ATCRBS), any one of the 4096 selectable Mode 3/A aircraft transponder codes except those ending in zero zero; e.g., discrete codes: 0010, 1201, 2317, 7777; non-discrete codes: 0100, 1200, 7700. Non-discrete codes are normally reserved for radar facilities that are not equipped with discrete decoding capability and for other purposes such as emergencies (7700), VFR aircraft (1200), etc. (See Radar) (Refer to AIM)

**DISCRETE FREQUENCY—** A separate radio frequency for use in direct pilot-controller communications in air traffic control which reduces frequency congestion by controlling the number of aircraft operating on a particular frequency at one time. Discrete frequencies are normally designated for each control sector in en route/terminal ATC facilities. Discrete frequencies are listed in the Airport/Facility Directory and the DOD FLIP IFR En Route Supplement. (See Control Sector)

**DISPLACED THRESHOLD—** A threshold that is located at a point on the runway other than the designated beginning of the runway. (See Threshold) (Refer to AIM)

**DISTANCE MEASURING EQUIPMENT/DME—** Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid. (See TACAN, VORTAC, Microwave Landing System)

**DISTRESS—** A condition of being threatened by serious and/or imminent, danger, and of requiring immediate assistance.

**DME FIX—** A geographical position determined by reference to a navigational aid which provides distance and azimuth information. It is defined by a specific distance in nautical miles and a radial, azimuth, or course (i.e., localizer) in degrees magnetic from that aid. (See Distance Measuring Equipment/DME, Fix, Microwave Landing System)

**DME SEPARATION—** Spacing of aircraft in terms of distances (nautical miles) determined by reference to distance measuring equipment (DME). (See Distance Measuring Equipment)

**DOD FLIP—** Department of Defense Flight Information Publications used for flight planning, en route, and terminal operations. FLIP is produced by the Defense Mapping Agency for world-wide use. United States Government Flight Information Publications (en route charts and instrument approach procedure charts) are incorporated in DOD FLIP for use in the National Airspace System (NAS).

**DOWNWIND LEG—** (See Traffic Pattern)

**DRAG CHUTE—** A parachute device installed on certain aircraft which is deployed on landing roll to assist in deceleration of the aircraft.

***EMERGENCY—*** A DISTRESS or URGENCY condition.

**EMERGENCY LOCATOR TRANSMITTER/ELT—** A radio transmitter attached to the aircraft structure which operates from its own power source on 121.5 MHz and 243.0 MHz. It aids in locating downed aircraft by radiating a downward sweeping audio tone, 2-4 times per second. It is designed to function without human action after an accident. (Refer to FAR, Part 91, AIM)

**EMERGENCY SAFE ALTITUDE—** (See Minimum Safe Altitude)

**E-MSAW—** (See En Route Minimum Safe Altitude Warning)

**EN ROUTE AIR TRAFFIC CONTROL SERVICES—** Air traffic control service provided aircraft on IFR flight plans, generally by centers, when these aircraft are operating between departure and destination terminal areas. When equipment, capabilities, and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft. (See NAS Stage A, Air Route Traffic Control Center) (Refer to AIM)

**EN ROUTE AUTOMATED RADAR TRACKING SYSTEM/EARTS—** An automated radar and radar beacon tracking system. Its functional capabilities and design are essentially the same as the terminal ARTS IIIA system except for the EARTS capability of employing both short-range (ASR) and long-range (ARSR) radars, use of full digital radar displays, and fail-safe design. (See Automated Radar Terminal Systems/ ARTS)

**EN ROUTE CHARTS—** (See Aeronautical Charts)

**EN ROUTE DESCENT—** Descent from the en route cruising altitude which takes place along the route of flight.

**EN ROUTE FLIGHT ADVISORY SERVICE/ FLIGHT WATCH—** A service specifically designed to provide, upon pilot request, timely weather information pertinent to his type of flight, intended route of flight, and altitude. The FSS's providing this service are listed in the Airport/Facility Directory. (Refer to AIM)

**EN ROUTE MINIMUM SAFE ALTITUDE WARNING/E-MSAW—** A function of the NAS Stage A en route computer that aids the controller by alerting him when a tracked aircraft is below or predicted by the computer to go below a predetermined minimum IFR altitude (MIA).

*ICAO—ESTIMATED ELAPSED TIME/EET—*The estimated time required to proceed from one significant point to another (for use in international flight planning). (See Total Estimated Elapsed Time)

*ICAO—ESTIMATED OFF-BLOCK TIME—*The estimated time at which the aircraft will commence movement associated with departure (for use in international flight planning).

***EXECUTE MISSED APPROACH—*** Instructions issued to a pilot making an instrument approach which means continue inbound to the missed approach point and execute the missed approach procedure as described on the Instrument Approach Procedure Chart or as previously assigned by ATC. The pilot may climb immediately to the altitude specified in the missed approach procedure upon making a missed approach. No turns should be initiated prior to reaching the missed approach point. When conducting an ASR or PAR approach, execute the assigned missed approach procedure immediately upon receiving instructions to "execute missed approach." (Refer to AIM)

***EXPECT (ALTITUDE) AT (TIME) or (FIX)—*** Used under certain conditions in a departure clearance to provide a pilot with an altitude to be used in the event of two-way communication failure. (Refer to AIM)

**EXPECTED DEPARTURE CLEARANCE TIME/ EDCT—** The runway release time assigned to an aircraft in a controlled departure time program and shown on the flight progress strip as an EDCT.

***EXPECT FURTHER CLEARANCE (TIME)/EFC—*** The time a pilot can expect to receive clearance beyond a clearance limit.

***EXPECT FURTHER CLEARANCE VIA (AIRWAYS, ROUTES OR FIXES)—*** Used to inform a pilot of the routing he can expect if any part of the route beyond a short range clearance limit differs from that filed.

***EXPEDITE—*** Used by ATC when prompt compliance is required to avoid the development of an imminent situation.

**FAST FILE—** A system whereby a pilot files a flight plan via telephone that is tape recorded and then transcribed for transmission to the appropriate air traffic facility. Locations having a fast file capability are contained in the Airport/Facility Directory. (Refer to AIM)

**FEATHERED PROPELLER—** A propeller whose blades have been rotated so that the leading and trailing edges are nearly parallel with the aircraft flight path to stop or minimize drag and engine rotation. Normally used to indicate shutdown of a reciprocating or turboprop engine due to malfunction.

**FEEDER ROUTE—** A route depicted on instrument approach procedure charts to designate routes for aircraft to proceed from the en route structure to the initial approach fix (IAF). (See Instrument Approach Procedure)

**FERRY FLIGHT—** A flight for the purpose of:

1. Returning an aircraft to base,
2. Delivering an aircraft from one location to another.
3. Moving an aircraft to and from a maintenance base.

Ferry flights, under certain conditions, may be conducted under terms of a special flight permit.

**FILED—** Normally used in conjunction with flight plans, meaning a flight plan has been submitted to ATC.

**FILED EN ROUTE DELAY—** Any of the following preplanned delays at points/areas along the route of flight which require special flight plan filing and handling techniques.

1. Terminal Area Delay—A delay within a terminal area for touch-and-go, low approach, or other terminal area activity.
2. Special Use Airspace Delay—A delay within a Military Operating Area, Restricted Area, Warning Area, or ATC Assigned Airspace.
3. Aerial Refueling Delay—A delay within an Aerial Refueling Track or Anchor.

***FINAL—*** Commonly used to mean that an aircraft is on the final approach course or is aligned with a landing area. (See Final Approach Course, Final Approach—IFR, Traffic Pattern, Segments of an Instrument Approach Procedure)

**FINAL APPROACH COURSE—** A published MLS course, a straight line extension of a localizer, a final approach radial/bearing, or a runway centerline all without regard to distance. (See Final Approach—IFR, Traffic Pattern)

**FINAL APPROACH FIX/FAF—** The fix from which the final approach (IFR) to an airport is executed and which identifies the beginning of the final approach segment. It is designated on Government charts by the Maltese Cross symbol for nonprecision approaches and the lightning bolt symbol for precision approaches; or when ATC directs a lower-than-published Glideslope/path Intercept Altitude, it is the resultant actual point of the glideslope/path intercept. (See Final Approach Point, Glideslope/path Intercept Altitude, Segments of an Instrument Approach Procedure)

**FINAL APPROACH—IFR—** The flight path of an aircraft which is inbound to an airport on a final instrument approach course, beginning at the final approach fix or point and extending to the airport or the point where a circle-to-land maneuver or a missed approach is executed. (See Segments of an Instrument Approach Procedure, Final Approach Fix, Final Approach Course, Final Approach Point)

*ICAO—FINAL APPROACH—* That part of an instrument approach procedure from the time the aircraft has:

1. Completed the last procedure turn or base turn, where one is specified, or
2. Crossed a specified fix, or
3. Intercepted the last track specified for the procedures until it has crossed a point in the vicinity of an aerodrome from which:
    a. A landing can be made, or
    b. A missed approach procedure is initiated.

**FINAL APPROACH POINT/FAP—** The point, applicable only to a nonprecision approach with no depicted FAF (such as an on-airport VOR), where the aircraft is established inbound on the final approach course from the procedure turn and where the final approach descent may be commenced. The FAP serves as the FAF and identifies the beginning of the final approach segment. (See Final Approach Fix, Segments of an Instrument Approach Procedure)

**FINAL APPROACH SEGMENT—** (See Segments of an Instrument Approach Procedure)

**FINAL APPROACH—VFR—** (See Traffic Pattern)

**FINAL CONTROLLER—** The controller providing information and final approach guidance during PAR and ASR approaches utilizing radar equipment. (See Radar Approach)

**FIX—** A geographical position determined by visual reference to the surface, by reference to one or more radio NAVAIDs, by celestial plotting, or by another navigational device.

**FLAG/FLAG ALARM—** A warning device incorporated in certain airborne navigation and flight instruments indicating that:

1. Instruments are inoperative or otherwise not operating satisfactorily, or
2. Signal strength or quality of the received signal falls below acceptable values.

**FLAMEOUT—** Unintended loss of combustion in turbine engines resulting in the loss of engine power.

**FLIGHT CHECK—** A call-sign prefix used by FAA aircraft engaged in flight inspection/certification of navigational aids and flight procedures. The word "recorded" may be added as a suffix; e.g., "Flight Check 320 recorded" to indicate that an automated flight inspection is in progress in terminal areas. (See Flight Inspection/Flight Check) (Refer to AIM).

**FLIGHT INFORMATION REGION/FIR—** An airspace of defined dimensions within which Flight Information Service and Alerting Service are provided.

1. Flight Information Service—A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.
2. Alerting Service—A service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid and to assist such organizations as required.

**FLIGHT INSPECTION/FLIGHT CHECK—** Inflight investigation and evaluation of a navigational aid to determine whether it meets established tolerances. (See Navigational Aid)

***FLIGHT LEVEL—*** A level of constant atmospheric pressure related to a reference datum of 29.92 inches of mercury. Each is stated in three digits that represent hundreds of feet. For example, flight level 250 represents a barometric altimeter indication of 25,000 feet; flight level 255, an indication of 25,500 feet.

*ICAO—FLIGHT LEVELS*—Surfaces of constant atmospheric pressure which are related to a specific pressure datum, 1013.2 mb (29.92 inches) and are separated by specific pressure intervals.

**FLIGHT LINE—** A term used to describe the precise movement of a civil photogrammetric aircraft along a predetermined course(s) at a predetermined altitude during the actual photographic run.

**FLIGHT PATH—** A line, course, or track along which an aircraft is flying or intended to be flown. (See Track, Course)

**FLIGHT PLAN—** Specified information relating to the intended flight of an aircraft that is filed orally or in writing with an FSS or an ATC facility. (See Fast File, Filed) (Refer to AIM)

**FLIGHT RECORDER—** A general term applied to any instrument or device that records information about the performance of an aircraft in flight or about conditions encountered in flight. Flight recorders may make records of airspeed, outside air temperature, vertical acceleration, engine RPM, manifold pressure, and other pertinent variables for a given flight.

*ICAO—FLIGHT RECORDER*—Any type of recorder installed in the aircraft for the purpose of complementing accident/incident investigation.

**FLIGHT SERVICE STATION/FSS—** Air traffic facilities which provide pilot briefing, en route communications and VFR search and rescue services, assist lost aircraft and aircraft in emergency situations, relay ATC clearances, originate Notices to Airmen, broadcast aviation weather and NAS information, receive and process IFR flight plans, and monitor NAVAID's. In addition, at selected locations FSS's provide Enroute Flight Advisory Service (Flight Watch), take weather observations, issue airport advisories, and advise Customs and Immigration of transborder flights. (Refer to AIM)

**FLIGHT STANDARDS DISTRICT OFFICE/FSDO—** An FAA field office serving an assigned geographical area and staffed with Flight Standards personnel who serve the aviation industry and the general public on matters relating to the certification and operation of air carrier and general aviation aircraft. Activities include general surveillance of operational safety, certification of airmen and aircraft, accident prevention, investigation, enforcement, etc.

**FLIGHT TEST—** A flight for the purpose of:

1. Investigating the operation/flight characteristics of an aircraft or aircraft component.
2. Evaluating an applicant for a pilot certificate or rating.

**FLIGHT VISIBILITY—** (See Visibility)

**FLIGHT WATCH—** A shortened term for use in air-ground contacts on frequency 122.0 MHz to identify the flight service station providing En Route Flight Advisory Service; e.g., "Oakland Flight Watch." (See En Route Flight Advisory Service)

**FLIP—** (See DOD FLIP)

**FLOW CONTROL—** Measures designed to adjust the flow of traffic into a given airspace, along a given route, or bound for a given aerodrome (airport) so as to ensure the most effective utilization of the airspace. (See Quota Flow Control) (Refer to Airport/Facility Directory

**FLY HEADING (DEGREES)—** Informs the pilot of the heading he should fly. The pilot may have to turn to, or continue on, a specific compass direction in order to comply with the instructions. The pilot is expected to turn in the shorter direction to the heading unless otherwise instructed by ATC.

**FORMATION FLIGHT—** More than one aircraft which, by prior arrangement between the pilots, operate as a single aircraft with regard to navigation and position reporting. Separation between aircraft within the formation is the responsibility of the flight leader and the pilots of the other aircraft in the flight. This includes transition periods when aircraft within the formation are maneuvering to attain separation from each other to effect individual control and during join-up and breakaway.

1. A standard formation is one in which a proximity of no more than 1 mile laterally or longitudinally and within 100 feet vertically from the flight leader is maintained by each wingman.
2. Nonstandard formations are those operating under any of the following conditions:
    a. When the flight leader has requested and ATC has approved other than standard formation dimensions.
    b. When operating within an authorized altitude reservation (ALTRV) or under the provisions of a letter of agreement.
    c. When the operations are conducted in airspace specifically designed for a special activity. (See Altitude Reservation) (Refer to FAR Part 91)

**FSS—** (See Flight Service Station)

**FUEL DUMPING—** Airborne release of usable fuel. This does not include the dropping of fuel tanks. (See Jettisoning of External Stores)

**FUEL SIPHONING/FUEL VENTING—** Unintentional release of fuel caused by overflow, puncture, loose cap, etc.

**GATE HOLD PROCEDURES—** Procedures at selected airports to hold aircraft at the gate or other ground location whenever departure delays exceed or are anticipated to exceed 5 minutes. The sequence for departure will be maintained in accordance with initial call-up unless modified by Flow Control restrictions. Pilots should monitor the ground control/clearance delivery frequency for engine startup advisories or new proposed start time if the delay changes. (See Flow Control)

**GENERAL AVIATION—** That portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of public convenience and necessity from the Civil Aeronautics Board and large aircraft commercial operators.

*ICAO—GENERAL AVIATION—*All civil aviation operations other than scheduled air services and non-scheduled air transport operations for remuneration or hire.

**GENERAL AVIATION DISTRICT OFFICE/GADO—** An FAA field office serving a designated geographical area and staffed with Flight Standards personnel who have the responsibility for serving the aviation industry and the general public on all matters relating to the certification and operation of general aviation aircraft.

**GLIDESLOPE/GLIDEPATH—** Provides vertical guidance for aircraft during approach and landing. The glideslope/glidepath is based on the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS/MLS, or
2. Visual ground aids, such as VASI, which provide vertical guidance for a VFR approach or for the visual portion of an instrument approach and landing.
3. PAR. Used by ATC to inform an aircraft making a PAR approach of its vertical position (elevation) relative to the descent profile.

*ICAO—GLIDEPATH—* A descent profile determined for vertical guidance during a final approach.

**GLIDESLOPE/GLIDEPATH INTERCEPT ALTITUDE—** The minimum altitude to intercept the glideslope/path on a precision approach. The intersection of the published intercept altitude with the glideslope/path, designated on Government charts by the lightning bolt symbol, is the precision FAF; however, when ATC directs a lower altitude, the resultant lower intercept position is then the FAF. (See Final Approach Fix, Segments of an Instrument Approach Procedure)

***GO AHEAD***— Proceed with your message. Not to be used for any other purpose.

***GO AROUND***— Instructions for a pilot to abandon his approach to landing. Additional instructions may follow. Unless otherwise advised by ATC, a VFR aircraft or an aircraft conducting visual approach should overfly the runway while climbing to traffic pattern altitude and enter the traffic pattern via the crosswind leg. A pilot on an IFR flight plan making an instrument approach should execute the published missed approach procedure or proceed as instructed by ATC; e.g., "Go around" (additional instructions if required). (See Low Approach, Missed Approach)

**GROUND CLUTTER**— A pattern produced on the radar scope by ground returns which may degrade other radar returns in the affected area. The effect of ground clutter is minimized by the use of moving target indicator (MTI) circuits in the radar equipment resulting in a radar presentation which displays only targets which are in motion. (See Clutter)

**GROUND CONTROLLED APPROACH/GCA**— A radar approach system operated from the ground by air traffic control personnel transmitting instructions to the pilot by radio. The approach may be conducted with surveillance radar (ASR) only or with both surveillance and precision approach radar (PAR). Usage of the term "GCA" by pilots is discouraged except when referring to a GCA facility. Pilots should specifically request a "PAR" approach when a precision radar approach is desired or request an "ASR" or "surveillance" approach when a nonprecision radar approach is desired. (See Radar Approach)

**GROUND DELAY**— The amount of delay attributed to ATC, encountered prior to departure, usually associated with a CDT program.

**GROUND SPEED**— The speed of an aircraft relative to the surface of the earth.

**GROUND VISIBILITY**— (See Visibility)

**HANDOFF**— An action taken to transfer the radar identification of an aircraft from one controller to another if the aircraft will enter the receiving controller's airspace and radio communications with the aircraft will be transferred.

***HAVE NUMBERS***— Used by pilots to inform ATC that they have received runway, wind, and altimeter information only.

***HEAVY (AIRCRAFT)***— (See Aircraft Classes)

**HEIGHT ABOVE AIRPORT/HAA**— The height of the Minimum Descent Altitude above the published airport elevation. This is published in conjunction with circling minimums. (See Minimum Descent Altitude)

**HEIGHT ABOVE LANDING/HAL**— The height above a designated helicopter landing area used for helicopter instrument approach procedures. (Refer to FAR Part 97)

**HEIGHT ABOVE TOUCHDOWN/HAT**— The height of the Decision Height or Minimum Descent Altitude above the highest runway elevation in the touchdown zone (first 3,000 feet of the runway). HAT is published on instrument approach charts in conjunction with all straight-in minimums. (See Decision Height, Minimum Descent Altitude)

**HELICOPTER/COPTER**— Rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors.

*ICAO—HELICOPTER*—A heavier-than-air aircraft supported in flight by the reactions of the air on one or more power-driven rotors on substantially vertical axes.

**HELIPAD**— A small, designated area, usually with a prepared surface, on a heliport, airport, landing/takeoff area, apron/ramp, or movement area used for takeoff, landing, or parking of helicopters.

**HELIPORT**— An area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters and includes its buildings and facilities if any.

**HERTZ/Hz**— The standard radio equivalent of frequency in cycles per second of an electromagnetic wave. Kilohertz (kHz) is a frequency of one thousand cycles per second. Megahertz (MHz) is a frequency of one million cycles per second.

**HIGH FREQUENCY/HF**— The frequency band between 3 and 30 MHz. (See High Frequency Communications)

**HIGH FREQUENCY COMMUNICATIONS/HF COMMUNICATIONS**— High radio frequencies (HF) between 3 and 30 MHz used for air-to-ground voice communication in overseas operations.

**HIGH SPEED TAXIWAY/EXIT/TURNOFF**— A long radius taxiway designed and provided with lighting or marking to define the path of aircraft, traveling at high speed (up to 60 knots), from the runway center to a point on the center of a taxiway. Also referred to as long radius exit or turn-off taxiway. The high speed taxiway is designed to expedite aircraft turning off the runway after landing, thus reducing runway occupancy time.

**HOLD/HOLDING PROCEDURE**— A predetermined maneuver which keeps aircraft within a specified airspace while awaiting further clearance from air traffic control. Also used during ground operations to keep aircraft within a specified area or at a specified point while awaiting further clearance from air traffic control. (See Holding Fix) (Refer to AIM)

**HOLDING FIX**— A specified fix identifiable to a pilot by NAVAID's or visual reference to the ground used as a reference point in establishing and maintaining the position of an aircraft while holding. (See Fix, Hold, Visual Holding) (Refer to AIM)

**HOLD FOR RELEASE**— Used by ATC to delay an aircraft for traffic management reasons; i.e., weather, traffic volume, etc. Hold for release instructions (including departure delay information) are used to inform a pilot or a controller (either directly or through an authorized relay) that a departure clearance is not valid until a release time or additional instructions have been received.

*ICAO—HOLDING POINT—* A specified location, identified by visual or other means, in the vicinity of which the position of an aircraft in flight is maintained with air traffic control clearances.

***HOMING—*** Flight toward a NAVAID, without correcting for wind, by adjusting the aircraft heading to maintain a relative bearing of zero degrees. (See Bearing)

*ICAO—HOMING—*The procedure of using the direction-finding equipment of one radio station with the emission of another radio station, where at least one of the stations is mobile, and whereby the mobile station proceeds continuously towards the other station.

**HOVER CHECK—** Used to describe when a helicopter/VTOL aircraft requires a stabilized hover to conduct a performance/power check prior to hover taxi, air taxi, or takeoff. Altitude of the hover will vary based on the purpose of the check.

**HOVER TAXI—** Used to describe a helicopter/VTOL aircraft movement conducted above the surface and in ground effect at airspeeds less than approximately 20 knots. The actual height may vary, and some helicopters may require hover taxi above 25 feet AGL to reduce ground effect turbulence or provide clearance for cargo slingloads. (See Air Taxi, Hover Check) (Refer to AIM)

***HOW DO YOU HEAR ME?—*** A question relating to the quality of the transmission or to determine how well the transmission is being received.

***IDENT—*** A request for a pilot to activate the aircraft transponder identification feature. This will help the controller to confirm an aircraft identity or to identify an aircraft. (Refer to AIM)

**IDENT FEATURE—** The special feature in the Air Traffic Control Radar Beacon System (ATCRBS) equipment. It is used to immediately distinguish one displayed beacon target from other beacon targets. (See Ident)

***IF FEASIBLE, REDUCE SPEED TO (SPEED)—*** (See Speed Adjustment)

***IF NO TRANSMISSION RECEIVED FOR (TIME)—*** Used by ATC in radar approaches to prefix procedures which should be followed by the pilot in event of lost communications. (See Lost Communications)

**IFR AIRCRAFT/IFR FLIGHT—** An aircraft conducting flight in accordance with instrument flight rules.

**IFR CONDITIONS—** Weather conditions below the minimum for flight under visual flight rules. (See Instrument Meteorological Conditions)

**IFR DEPARTURE PROCEDURE—** (See IFR Takeoff Minimums and Departure Procedures) (Refer to AIM)

**IFR MILITARY TRAINING ROUTES (IR)—** Routes used by the Department of Defense and associated Reserve and Air Guard units for the purpose of conducting low-altitude navigation and tactical training in both IFR and VFR weather conditions below 10,000 feet MSL at airspeeds in excess of 250 knots IAS.

**IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES—** FAR, Part 91, prescribes standard takeoff rules for certain civil users. At some airports, obstructions or other factors require the establishment of nonstandard takeoff minimums, departure procedures, or both to assist pilots in avoiding obstacles during climb to the minimum en route altitude. Those airports are listed in NOS/DOD Instrument Approach Charts (IAP's) under a section entitled "IFR Takeoff Minimums and Departure Procedures." The NOS/DOD IAP chart legend illustrates the symbol used to alert the pilot to nonstandard takeoff minimums and departure procedures. When departing IFR from such airports or from any airports where there are no departure procedures, SID's, or ATC facilities available, pilots should advise ATC of any departure limitations. Controllers may query a pilot to determine acceptable departure directions, turns, or headings after takeoff. Pilots should be familiar with the departure procedures and must assure that their aircraft can meet or exceed any specified climb gradients.

**ILS CATEGORIES—**

1. ILS Category I—An ILS approach procedure which provides for approach to a height above touchdown of not less than 200 feet and with runway visual range of not less than 1,800 feet.
2. ILS Category II—An ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200 feet.
3. ILS Category III.
    a. IIIA—An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 700 feet.
    b. IIIB—An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 150 feet.
    c. IIIC—An ILS approach procedure which provides for approach without a decision height minimum and without runway visual range minimum.

***IMMEDIATELY—*** Used by ATC when such action compliance is required to avoid an imminent situation.

***INCREASE SPEED TO (SPEED)—*** (See Speed Adjustment)

**INFORMATION REQUEST/INREQ—** A request originated by an FSS for information concerning an overdue VFR aircraft.

**INITIAL APPROACH FIX/IAF—** The fixes depicted on instrument approach procedure charts that identify the beginning of the initial approach segment(s). (See Fix, Segments of an Instrument Approach Procedure)

**INITIAL APPROACH SEGMENT—** (See Segments of an Instrument Approach Procedure)

**INNER MARKER/IM/INNER MARKER BEACON—** A marker beacon used with an ILS (CAT II) precision approach located between the middle marker and the end of the ILS runway, transmitting a radiation pattern keyed at six dots per second and indicating to the pilot, both aurally and visually, that he is at the designated decision height (DH), normally 100 feet above the touchdown zone elevation, on the ILS CAT II approach. It also marks progress during a CAT III approach. (See Instrument Landing System) (Refer to AIM)

**INSTRUMENT APPROACH PROCEDURE/IAP/INSTRUMENT APPROACH—** A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority. (See Segments of an Instrument Approach Procedure) (Refer to FAR, Part 91, AIM)

1. U. S. civil standard instrument approach procedures are approved by the FAA as prescribed under FAR, Part 97 and are available for public use.
2. U.S. military standard instrument approach procedures are approved and published by the Department of Defense.
3. Special instrument approach procedures are approved by the FAA for individual operators but are not published in FAR, Part 97 for public use.

*ICAO—INSTRUMENT APPROACH PROCEDURE—* A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

**INSTRUMENT FLIGHT RULES/IFR—** Rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan. (See Visual Flight Rules, Instrument Meteorological Conditions, Visual Meteorological Conditions) (Refer to AIM)

*ICAO—INSTRUMENT FLIGHT RULES—*A set of rules governing the conduct of flight under instrument meteorological conditions.

**INSTRUMENT LANDING SYSTEM/ILS—** A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer. (See Localizer)
2. Glideslope. (See Glideslope)
3. Outer Marker. (See Outer Marker)
4. Middle Marker. (See Middle Marker)
5. Approach Lights. (See Airport Lighting)

(Refer to FAR Part 91, AIM)

**INSTRUMENT METEOROLOGICAL CONDITIONS/IMC—** Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling less than the minima specified for visual meteorological conditions. (See Visual Meteorological Conditions, Instrument Flight Rules, Visual Flight Rules)

**INSTRUMENT RUNWAY—** A runway equipped with electronic and visual navigation aids for which a precision or nonprecision approach procedure having straight-in landing minimums has been approved.

*ICAO—INSTRUMENT RUNWAY—*A runway intended for the operation of aircraft using nonvisual aids and comprising:

1. Instrument Approach Runway—An instrument runway served by a nonvisual aid providing at least directional guidance adequate for a straight-in approach.
2. Precision Approach Runway, Category I—An instrument runway served by ILS or GCA approach aids and visual aids intended for operations down to 60 metres (200 feet) decision height and down to an RVR of the order of 800 metres (2,600 feet.)
3. Precision Approach Runway, Category II—An instrument runway served by ILS and visual aids intended for operations down to 30 metres (100 feet) decision height and down to an RVR of the order of 400 metres (1,200 feet.)
4. Precision Approach Runway, Category III—An instrument runway served by ILS (no decision height being applicable) and:
   a. By visual aids intended for operations down to an RVR of the order of 200 metres (700 feet);
   b. By visual aids intended for operations down to an RVR of the order of 50 metres (150 feet);
   c. Intended for operations without reliance on external visual reference.

**INTERMEDIATE APPROACH SEGMENT—** (See Segments of an Instrument Approach Procedure)

**INTERMEDIATE FIX/IF—** The fix that identifies the beginning of the intermediate approach segment of an instrument approach procedure. The fix is not normally identified on the instrument approach chart as an intermediate fix (IF). (See Segments of an Instrument Approach Procedure)

**INTERNATIONAL AIRPORT—** Relating to international flight, it means:

1. An airport of entry which has been designated by the Secretary of Treasury or Commissioner of Customs as an international airport for customs service.
2. A landing rights airport at which specific permission to land must be obtained from customs authorities in advance of contemplated use.
3. Airports designated under the Convention on International Civil Aviation as an airport for use by international commercial air transport and/or international general aviation. (Refer to Airport/Facility Directory and IFIM).

*ICAO—INTERNATIONAL AIRPORT—*Any airport designated by the Contracting State in whose territory it is situated as an airport of entry and departure for international air traffic, where the formalities incident to customs, immigration, public health, animal and plant quarantine, and similar procedures are carried out.

**INTERNATIONAL CIVIL AVIATION ORGANIZATION/ICAO—** A specialized agency of the United Nations whose objective is to develop the principles and techniques of international air navigation and to foster planning and development of international civil air transport.

**INTERNATIONAL FLIGHT INFORMATION MANUAL/IFIM—** A publication designed primarily as a pilot's preflight planning guide for flights into foreign airspace and for flights returning to the U.S. from foreign locations.

**INTERROGATOR—** The ground-based surveillance radar beacon transmitter-receiver, which normally scans in synchronism with a primary radar, transmitting discrete radio signals which repetitiously request all transponders on the mode being used to reply. The replies received are mixed with the primary radar returns and displayed on the same plan position indicator (radar scope). Also, applied to the airborne element of the TACAN/DME system. (See Transponder) (Refer to AIM)

**INTERSECTING RUNWAYS—** Two or more runways which cross or meet within their lengths. (See Intersection)

**INTERSECTION—**

1. A point defined by any combination of courses, radials, or bearings of two or more navigational aids.
2. Used to describe the point where two runways, a runway and a taxiway, or two taxiways cross or meet.

**INTERSECTION DEPARTURE/INTERSECTION TAKEOFF—** A takeoff or proposed takeoff on a runway from an intersection. (See Intersection)

***I SAY AGAIN—*** The message will be repeated.

**JAMMING—** Electronic or mechanical interference which may disrupt the display of aircraft on radar or the transmission/reception of radio communications/navigation.

**JET BLAST—** Jet engine exhaust (thrust stream turbulence). (See Wake Turbulence)

**JET ROUTE—** A route designed to serve aircraft operations from 18,000 feet MSL up to and including flight level 450. The routes are referred to as "J" routes with numbering to identify the designated route; e.g., J105. (See Route) (Refer to FAR Part 71)

**JET STREAM—** A migrating stream of high-speed winds present at high altitudes.

**JETTISONING OF EXTERNAL STORES—** Airborne release of external stores; e.g., tiptanks, ordnance. (See Fuel Dumping) (Refer to FAR Part 91)

**JOINT USE RESTRICTED AREA—** (See Restricted Area)

**KNOWN TRAFFIC—** With respect to ATC clearances, means aircraft whose altitude, position, and intentions are known to ATC.

**LANDING/TAKEOFF AREA—** Any locality either on land, water, or structures, including airports/heliports and intermediate landing fields, which is used, or intended to be used, for the landing and takeoff of aircraft whether or not facilities are provided for the shelter, servicing, or for receiving or discharging passengers or cargo.

*ICAO—LANDING AREA—*That part of the movement area intended for the landing and takeoff of aircraft.

**LANDING DIRECTION INDICATOR—** A device which visually indicates the direction in which landings and takeoffs should be made. (See Tetrahedron) (Refer to AIM)

**LANDING MINIMUMS/IFR LANDING MINIMUMS—** The minimum visibility prescribed for landing a civil aircraft while using an instrument approach procedure. The minimum applies with other limitations set forth in FAR Part 91 with respect to the Minimum Descent Altitude (MDA) or Decision Height (DH) prescribed in the instrument approach procedures as follows:

1. Straight-in landing minimums—A statement of MDA and visibility or DH and visibility, required for a straight-in landing on a specified runway, or
2. Circling minimums— A statement of MDA and visibility required for the circle-to-land maneuver.

Descent below the established MDA or DH is not authorized during an approach unless the aircraft is in a position from which a normal approach to the runway of intended landing can be made and adequate visual reference to required visual cues is maintained. (See Straight-in Landing, Circle-to-Land Maneuver, Decision Height, Minimum Descent Altitude, Visibility, Instrument Approach Procedure) (Refer to FAR Part 91)

**LANDING ROLL—** The distance from the point of touchdown to the point where the aircraft can be brought to a stop or exit the runway.

**LANDING SEQUENCE—** The order in which aircraft are positioned for landing. (See Approach Sequence)

**LAST ASSIGNED ALTITUDE—** The last altitude/flight level assigned by ATC and acknowledged by the pilot. (See Maintain) (Refer to FAR Part 91)

**LATERAL SEPARATION—** The lateral spacing of aircraft at the same altitude by requiring operation on different routes or in different geographical locations. (See Separation)

**LIGHTED AIRPORT—** An airport where runway and obstruction lighting is available. (See Airport Lighting) (Refer to AIM)

**LIGHT GUN—** A handheld directional light signaling device which emits a brilliant narrow beam of white, green, or red light as selected by the tower controller. The color and type of light transmitted can be used to approve or disapprove anticipated pilot actions where radio communication is not available. The light gun is used for controlling traffic operating in the vicinity of the airport and on the airport movement area. (Refer to AIM)

**LOCALIZER**— The component of an ILS which provides course guidance to the runway. (See Instrument Landing System) (Refer to AIM)

*ICAO—LOCALIZER COURSE (ILS)*— The locus of points, in any given horizontal plane, at which the DDM (difference in depth of modulation) is zero.

**LOCALIZER TYPE DIRECTIONAL AID/LDA**— A NAVAID used for nonprecision instrument approaches with utility and accuracy comparable to a localizer but which is not a part of a complete ILS and is not aligned with the runway. (Refer to AIM)

**LOCALIZER USABLE DISTANCE**— The maximum distance from the localizer transmitter at a specified altitude, as verified by flight inspection, at which reliable course information is continuously received. (Refer to AIM)

**LOCAL TRAFFIC**— Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport. (See Traffic Pattern)

**LONGITUDINAL SEPARATION**— The longitudinal spacing of aircraft at the same altitude by a minimum distance expressed in units of time or miles. (See Separation) (Refer to AIM)

**LORAN/LONG RANGE NAVIGATION**— An electronic navigational system by which hyperbolic lines of position are determined by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran A operates in the 1750—1950 kHz frequency band. Loran C and D operate in the 100—110 kHz frequency band. (Refer to AIM)

**LOST COMMUNICATIONS/TWO-WAY RADIO COMMUNICATIONS FAILURE**— Loss of the ability to communicate by radio. Aircraft are sometimes referred to as NORDO (No Radio). Standard pilot procedures are specified in FAR Part 91. Radar controllers issue procedures for pilots to follow in the event of lost communications during a radar approach when weather reports indicate that an aircraft will likely encounter IFR weather conditions during the approach. (Refer to FAR Part 91, AIM)

**LOW ALTITUDE AIRWAY STRUCTURE/FEDERAL AIRWAYS**— The network of airways serving aircraft operations up to but not including 18,000 feet MSL. (See Airway) (Refer to AIM)

***LOW ALTITUDE ALERT, CHECK YOUR ALTITUDE IMMEDIATELY***— (See Safety Alert)

**LOW ALTITUDE ALERT SYSTEM/LAAS**— An automated function of the TPX-42 that alerts the controller when a Mode C transponder-equipped aircraft on an IFR flight plan is below a predetermined minimum safe altitude. If requested by the pilot, LAAS monitoring is also available to VFR Mode C transponder-equipped aircraft.

**LOW APPROACH**— An approach over an airport or runway following an instrument approach or a VFR approach including the go-around maneuver where the pilot intentionally does not make contact with the runway. (Refer to AIM)

**LOW FREQUENCY/LF**— The frequency band between 30 and 300 kHz. (Refer to AIM)

**MACH NUMBER**— The ratio of true airspeed to the speed of sound; e.g., MACH .82, MACH 1.6. (See Airspeed)

***MAINTAIN***—

1. Concerning altitude/flight level, the term means to remain at the altitude/flight level specified. The phrase "climb and" or "descend and" normally precedes "maintain" and the altitude assignment; e.g., "descend and maintain 5,000."
2. Concerning other ATC instructions, the term is used in its literal sense; e.g., maintain VFR.

***MAKE SHORT APPROACH***— Used by ATC to inform a pilot to alter his traffic pattern so as to make a short final approach. (See Traffic Pattern)

**MANDATORY ALTITUDE**— An altitude depicted on an instrument Approach Procedure Chart requiring the aircraft to maintain altitude at the depicted value.

**MARKER BEACON**— An electronic navigation facility transmitting a 75 MHz vertical fan or boneshaped radiation pattern. Marker beacons are identified by their modulation frequency and keying code, and when received by compatible airborne equipment, indicate to the pilot, both aurally and visually, that he is passing over the facility. (See Outer Marker, Middle Marker, Inner Marker) (Refer to AIM)

**MAXIMUM AUTHORIZED ALTITUDE/MAA**— A published altitude representing the maximum usable altitude or flight level for an airspace structure or route segment. It is the highest altitude on a Federal airway, jet route, area navigation low or high route, or other direct route for which an MEA is designated in FAR Part 95 at which adequate reception of navigation aid signals is assured.

***MAYDAY***— The international radiotelephony distress signal. When repeated three times, it indicates imminent and grave danger and that immediate assistance is requested. (See Pan-Pan) (Refer to AIM)

**METEOROLOGICAL IMPACT STATEMENT/MIS**— An unscheduled planning forecast describing conditions expected to begin within 4 to 12 hours which may impact the flow of air traffic in a specific center's (ARTCC) area.

**METERING**— A method of time-regulating arrival traffic flow into a terminal area so as not to exceed a predetermined terminal acceptance rate.

**METERING FIX**— A fix along an established route from over which aircraft will be metered prior to entering terminal airspace. Normally, this fix should be established at a distance from the airport which will facilitate a profile descent 10,000 feet above airport elevation (AAE) or above.

**MIA**— (See Minimum IFR Altitudes)

**MICROWAVE LANDING SYSTEM/MLS—** A precision instrument approach system operating in the microwave spectrum which normally consists of the following components:

1. Azimuth Station.
2. Elevation Station.
3. Precision Distance Measuring Equipment. (See MLS Categories)

**MIDDLE COMPASS LOCATOR—** (See Compass Locator)

**MIDDLE MARKER/MM—** A marker beacon that defines a point along the glide slope of an ILS normally located at or near the point of decision height (ILS Category I). It is keyed to transmit alternate dots and dashes, with the alternate dots and dashes keyed at the rate of 95 dot/dash combinations per minute on a 1300 Hz tone, which is received aurally and visually by compatible airborne equipment. (See Marker Beacon, Instrument Landing System) (Refer to AIM)

**MID RVR—** (See Visibility)

**MILITARY AUTHORITY ASSUMES RESPONSIBILITY FOR SEPARATION OF AIRCRAFT/MARSA—** A condition whereby the military services involved assume responsibility for separation between participating military aircraft in the ATC system. It is used only for required IFR operations which are specified in letters of agreement or other appropriate FAA or military documents.

**MILITARY OPERATIONS AREA/MOA—** (See Special Use Airspace)

**MILITARY TRAINING ROUTES/MTR—** Airspace of defined vertical and lateral dimensions established for the conduct of military flight training at airspeeds in excess of 250 knots IAS. (See IFR (IR) and VFR (VR) Military Training Routes)

**MINIMUM CROSSING ALTITUDE/MCA—** The lowest altitude at certain fixes at which an aircraft must cross when proceeding in the direction of a higher minimum en route IFR altitude (MEA). (See Minimum En Route IFR Altitude)

**MINIMUM DESCENT ALTITUDE/MDA—** The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided. (See Nonprecision Approach Procedure)

**MINIMUM EN ROUTE IFR ALTITUDE/MEA—** The lowest published altitude between radio fixes which assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes. The MEA prescribed for a Federal airway or segment thereof, area navigation low or high route, or other direct route applies to the entire width of the airway, segment, or route between the radio fixes defining the airway, segment, or route. (Refer to FAR Parts 91 and 95; AIM)

**MINIMUM FUEL—** Indicates that an aircraft's fuel supply has reached a state where, upon reaching the destination, it can accept little or no delay. This is not an emergency situation but merely indicates an emergency situation is possible should any undue delay occur. (Refer to AIM)

**MINIMUM HOLDING ALTITUDE/MHA—** The lowest altitude prescribed for a holding pattern which assures navigational signal coverage, communications, and meets obstacle clearance requirements.

**MINIMUM IFR ALTITUDES/MIA—** Minimum altitudes for IFR operations as prescribed in FAR Part 91. These altitudes are published on aeronautical charts and prescribed in FAR Part 95 for airways and routes, and in FAR Part 97 for standard instrument approach procedures. If no applicable minimum altitude is prescribed in FAR Parts 95 or 97, the following minimum IFR altitude applies:

1. In designated mountainous areas, 2,000 feet above the highest obstacle within a horizontal distance of 5 statute miles from the course to be flown; or
2. Other than mountainous areas, 1,000 feet above the highest obstacle within a horizontal distance of 5 statute miles from the course to be flown; or
3. As otherwise authorized by the Administrator or assigned by ATC. (See Minimum En Route IFR Altitude, Minimum Obstruction Clearance Altitude, Minimum Crossing Altitude, Minimum Safe Altitude, Minimum Vectoring Altitude) (Refer to FAR Part 91)

**MINIMUM OBSTRUCTION CLEARANCE ALTITUDE/MOCA—** The lowest published altitude in effect between radio fixes on VOR airways, off-airway routes, or route segments which meets obstacle clearance requirements for the entire route segment and which assures acceptable navigational signal coverage only within 25 statute (22 nautical) miles of a VOR. (Refer to FAR Part 91 and 95)

**MINIMUM RECEPTION ALTITUDE/MRA—** The lowest altitude at which an intersection can be determined. (Refer to FAR Part 95)

**MINIMUM SAFE ALTITUDE/MSA—**

1. The minimum altitude specified in FAR Part 91 for various aircraft operations.
2. Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance for emergency use within a specified distance from the navigation facility upon which a procedure is predicated. These altitudes will be identified as Minimum Sector Altitudes or Emergency Safe Altitudes and are established as follows:
    a. Minimum Sector Altitudes—Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance within a 25-mile radius of the navigation facility upon which the procedure is predicated. Sectors depicted on approach charts must be at least 90 degrees in scope. These altitudes are for emergency use only and do not necessarily assure acceptable navigational signal coverage.

*ICAO—MINIMUM SECTOR ALTITUDE—* The lowest altitude which may be used under emergency conditions which will provide a minimum clearance of 300 meters (1,000 feet) above all obstacles located in an area contained within a sector of a circle of 25 nautical mile radius centered on a radio aid to navigation.

b. Emergency Safe Altitudes—Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance in nonmountainous areas and 2,000 feet of obstacle clearance in designated mountainous areas within a 100-mile radius of the navigation facility upon which the procedure is predicated and normally used only in military procedures. These altitudes are identified on published procedures as "Emergency Safe Altitudes."

**MINIMUM SAFE ALTITUDE WARNING (MSAW)—** A function of the ARTS III computer that aids the controller by alerting him when a tracked Mode C-equipped aircraft is below or is predicted by the computer to go below a predetermined minimum safe altitude. (Refer to AIM)

**MINIMUMS/MINIMA—** Weather condition requirements established for a particular operation or type of operation; e.g., IFR takeoff or landing, alternate airport for IFR flight plans, VFR flight, etc. (See Landing Minimums, IFR Takeoff Minimums, VFR Conditions, IFR Conditions) (Refer to FAR Part 91, AIM)

**MINIMUM VECTORING ALTITUDE/MVA—** The lowest MSL altitude at which an IFR aircraft will be vectored by a radar controller, except as otherwise authorized for radar approaches, departures, and missed approaches. The altitude meets IFR obstacle clearance criteria. It may be lower than the published MEA along an airway or J-route segment. It may be utilized for radar vectoring only upon the controller's determination that an adequate radar return is being received from the aircraft being controlled. Charts depicting minimum vectoring altitudes are normally available only to the controllers and not to pilots. (Refer to AIM)

***MISSED APPROACH—***

1. A maneuver conducted by a pilot when an instrument approach cannot be completed to a landing. The route of flight and altitude are shown on instrument approach procedure charts. A pilot executing a missed approach prior to the Missed Approach Point (MAP) must continue along the final approach to the MAP. The pilot may climb immediately to the altitude specified in the missed approach procedure.
2. A term used by the pilot to inform ATC that he is executing the missed approach.
3. At locations where ATC radar service is provided, the pilot should conform to radar vectors when provided by ATC in lieu of the published missed approach procedure. (See Missed Approach Point) (Refer to AIM)

*ICAO—MISSED APPROACH PROCEDURE—* The procedure to be followed if, after an instrument approach, a landing is not effected, and occuring normally:

1. When the aircraft has descended to the decision height and has not established visual contact, or
2. When directed by air traffic control to pull up or to go around again.

**MISSED APPROACH POINT/MAP—** A point prescribed in each instrument approach procedure at which a missed approach procedure shall be executed if the required visual reference does not exist. (See Missed Approach, Segments of an Instrument Approach Procedure)

**MISSED APPROACH SEGMENT—** (See Segments of an Instrument Approach Procedure)

**MLS—**(See Microwave Landing System)

**MLS CATEGORIES—**

1. MLS Category I—An MLS approach procedure which provides for an approach to a height above touchdown of not less than 200 feet and a runway visual range of not less than 1,800 feet.
2. MLS Category II—Undefined until data gathering/analysis completion.
3. MLS Category III—Undefined until data gathering/analysis completion.

**MODE—** The letter or number assigned to a specific pulse spacing of radio signals transmitted or received by ground interrogator or airborne transponder components of the Air Traffic Control Radar Beacon System (ATCRBS). Mode A (military Mode 3) and Mode C (altitude reporting) are used in air traffic control. (See Transponder, Interrogator, Radar) (Refer to AIM)

*ICAO—MODE (SSR MODE)—* The letter or number assigned to a specific pulse spacing of the interrogation signals transmitted by an interrogator. There are 4 modes, A, B, C and D corresponding to four different interrogation pulse spacings.

**MOVEMENT AREA—** The runways, taxiways, and other areas of an airport/heliport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports/heliports with a tower, specific approval for entry onto the movement area must be obtained from ATC.

*ICAO—MOVEMENT AREA—* That part of an aerodrome intended for the surface movement of aircraft, including the maneuvering area and aprons.

**MOVING TARGET INDICATOR/MTI—** An electronic device which will permit radar scope presentation only from targets which are in motion. A partial remedy for ground clutter.

**MSAW—** (See Minimum Safe Altitude Warning)

**NAS STAGE A—** The en route ATC system's radar, computers and computer programs, controller plan view displays (PVDs/Radar Scopes), input/output devices, and the related communications equipment which are integrated to form the heart of the automated IFR air traffic control system. This equipment performs Flight Data Processing (FDP) and Radar Data Processing (RDP). It interfaces with automated terminal systems and is used in the control of en route IFR aircraft. (Refer to AIM)

**NATIONAL AIRSPACE SYSTEM/NAS—** The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures, technical information, and manpower and material. Included are system components shared jointly with the military.

**NATIONAL BEACON CODE ALLOCATION PLAN AIRSPACE/NBCAP AIRSPACE—** Airspace over United States territory located within the North American continent between Canada and Mexico, including adjacent territorial waters outward to about boundaries of oceanic control areas (CTA)/Flight Information Regions (FIR). (See Flight Information Region)

**NATIONAL FLIGHT DATA CENTER/NFDC—** A facility in Washington D.C., established by FAA to operate a central aeronautical information service for the collection, validation, and dissemination of aeronautical data in support of the activities of government, industry, and the aviation community. The information is published in the National Flight Data Digest. (See National Flight Data Digest)

**NATIONAL FLIGHT DATA DIGEST/NFDD—** A daily (except weekends and Federal holidays) publication of flight information appropriate to aeronautical charts, aeronautical publications, Notices to Airmen, or other media serving the purpose of providing operational flight data essential to safe and efficient aircraft operations.

**NATIONAL SEARCH AND RESCUE PLAN—** An interagency agreement which provides for the effective utilization of all available facilities in all types of search and rescue missions.

**NAVAID CLASSES—** VOR, VORTAC, and TACAN aids are classed according to their operational use. The three classes of NAVAID's are:

T—Terminal.

L—Low altitude.

H—High altitude.

The normal service range for T, L, and H class aids is found in the AIM. Certain operational requirements make it necessary to use some of these aids at greater service ranges than specified. Extended range is made possible through flight inspection determinations. Some aids also have lesser service range due to location, terrain, frequency protection, etc. Restrictions to service range are listed in Airport/Facility Directory.

**NAVIGABLE AIRSPACE—** Airspace at and above the minimum flight altitudes prescribed in the FAR's including airspace needed for safe takeoff and landing. (Refer to FAR Part 91)

**NAVIGATIONAL AID/NAVAID—** Any visual or electronic device airborne or on the surface which provides point-to- point guidance information or position data to aircraft in flight. (See Air Navigation Facility)

**NDB—** (See Nondirectional Beacon)

***NEGATIVE—*** "No," or "permission not granted," or "that is not correct."

***NEGATIVE CONTACT—*** Used by pilots to inform ATC that:

1. Previously issued traffic is not in sight. It may be followed by the pilot's request for the controller to provide assistance in avoiding the traffic.
2. They were unable to contact ATC on a particular frequency.

**NIGHT—** The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time.

*ICAO—NIGHT—* The hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise as may be specified by the appropriate authority.

***NO GYRO APPROACH/VECTOR—*** A radar approach/vector provided in case of a malfunctioning gyro-compass or directional gyro. Instead of providing the pilot with headings to be flown, the controller observes the radar track and issues control instructions "turn right/left" or "stop turn" as appropriate. (Refer to AIM)

**NONAPPROACH CONTROL TOWER—** Authorizes aircraft to land or takeoff at the airport controlled by the tower or to transit the airport traffic area. The primary function of a nonapproach control tower is the sequencing of aircraft in the traffic pattern and on the landing area. Nonapproach control towers also separate aircraft operating under instrument flight rules clearances from approach controls and centers. They provide ground control services to aircraft, vehicles, personnel, and equipment on the airport movement area.

**NONCOMPOSITE SEPARATION—** Separation in accordance with minima other than the composite separation minimum specified for the area concerned.

**NONDIRECTIONAL BEACON/RADIO BEACON/NDB—** An L/MF or UHF radio beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his bearing to or from the radio beacon and "home" on or track to or from the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator. (See Compass Locator, Automatic Direction Finder)

**NONPRECISION APPROACH PROCEDURE/NONPRECISION APPROACH—** A standard instrument approach procedure in which no electronic glide slope is provided; e.g., VOR, TACAN, NDB, LOC, ASR, LDA, or SDF approaches.

**NONRADAR—** Precedes other terms and generally means without the use of radar, such as:

1. Nonradar Route—A flight path or route over which the pilot is performing his own navigation. The pilot may be receiving radar separation, radar monitoring, or other ATC services while on a nonradar route. (See Radar Route)
2. Nonradar Approach—Used to describe instrument approaches for which course guidance on final approach is not provided by ground- based precision or surveillance radar. Radar vectors to the final approach course may or may not be provided by ATC. Examples of nonradar approaches are VOR, NDB, TACAN, and ILS/MLS approaches. (See Final Approach—IFR, Final Approach Course, Radar Approach, Instrument Approach Procedure)
3. Nonradar Separation—The spacing of aircraft in accordance with established minima without the use of radar; e.g., vertical, lateral, or longitudinal separation. (See Radar Separation)

*ICAO—NonRadar Separation—* The separation used when aircraft position information is derived from sources other than radar.

4. Nonradar Arrival—An arriving aircraft that is not being vectored to the final approach course for an instrument approach or towards the airport for a visual approach. The aircraft may or may not be in a radar environment and may or may not be receiving radar separation, radar monitoring, or other services provided by ATC. (See Radar Arrival, Radar Environment)

**NONRADAR APPROACH CONTROL—** An ATC facility providing approach control service without the use of radar. (See Approach Control, Approach Control Service)

***NORDO—*** (See Lost Communications)

**NORTH AMERICAN ROUTE—** A numerically coded route preplanned over existing airway and route systems to and from specific coastal fixes serving the North Atlantic. North American Routes consist of the following:

1. Common Route/Portion—That segment of a North American Route between the inland navigation facility and the coastal fix.
2. Non-Common Route/Portion—That segment of a North American Route between the inland navigation facility and a designated North American terminal.
3. Inland Navigation Facility—A navigation aid on a North American Route at which the common route and/or the non-common route begins or ends.
4. Coastal Fix—A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

**NOTICES TO AIRMEN PUBLICATION—** A publication designed primarily as a pilot's operational manual containing current NOTAM information considered essential to the safety of flight as well as supplemental data to other aeronautical publications. (See Notice to Airmen/NOTAM)

**NOTICE TO AIRMEN/NOTAM—** A notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment, condition, or change in any component (facility, service, or procedure of, or hazard in the National Airspace System) the timely knowledge of which is essential to personnel concerned with flight operations.

1. NOTAM(D)—A NOTAM given (in addition to local dissemination) distant dissemination via teletypewriter beyond the area of responsibility of the Flight Service Station. These NOTAM's will be stored and repeated hourly until canceled.
2. NOTAM(L)—A NOTAM given local dissemination by voice (teletypewriter where applicable) and a wide variety of means, such as telautograph, teleprinter, facsimile reproduction, hot line, telecopier, telegraph, and telephone, to satisfy local user requirements.
3. FDC NOTAM—A notice to airmen, regulatory in nature, transmitted by NFDC and given all-circuit dissemination.

*ICAO—NOTAM—* A notice, containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

***NUMEROUS TARGETS VICINITY (LOCATION)—*** A traffic advisory issued by ATC to advise pilots that targets on the radar scope are too numerous to issue individually. (See Traffic Advisories)

**OBSTACLE—** An existing object, object of natural growth, or terrain at a fixed geographical location or which may be expected at a fixed location within a prescribed area with reference to which vertical clearance is or must be provided during flight operation.

**OBSTRUCTION—** Any object/obstacle exceeding the obstruction standards specified by FAR Part 77, Subpart C.

**OBSTRUCTION LIGHT—** A light or one of a group of lights, usually red or white, frequently mounted on a surface structure or natural terrain to warn pilots of the presence of an obstruction.

**OFF-ROUTE VECTOR—** A vector by ATC which takes an aircraft off a previously assigned route. Altitudes assigned by ATC during such vectors provide required obstacle clearance.

**OFFSET PARALLEL RUNWAYS—** Staggered runways having centerlines which are parallel.

***ON COURSE—***

1. Used to indicate that an aircraft is established on the route centerline.
2. Used by ATC to advise a pilot making a radar approach that his aircraft is lined up on the final approach course. (See On-Course Indication)

**ON-COURSE INDICATION—** An indication on an instrument, which provides the pilot a visual means of determining that the aircraft is located on the centerline of a given navigational track, or an indication on a radar scope that an aircraft is on a given track.

**OPTION APPROACH—** An approach requested and conducted by a pilot which will result in either a touch-and-go, missed approach, low approach, stop-and-go, or full stop landing. (See Cleared for the Option) (Refer to AIM)

**ORGANIZED TRACK SYSTEM—** A moveable system of oceanic tracks that traverses the North Atlantic between Europe and North America the physical position of which is determined twice daily taking the best advantage of the winds aloft.

***OUT—*** The conversation is ended and no response is expected.

**OUTER AREA (associated with ARSA)—** Nonregulatory airspace surrounding designated ARSA airports wherein ATC provides radar vectoring and sequencing on a full-time basis for all IFR and participating VFR aircraft. The service provided in the outer area is called ARSA service which includes: IFR/IFR—standard IFR separation; IFR/VFR—traffic advisories and conflict resolution; and VFR/VFR—traffic advisories and, as appropriate, safety alerts. The normal radius will be 20 nautical miles with some variations based on site-specific requirements. The outer area extends outward from the primary ARSA airport and extends from the lower limits of radar/radio coverage up to the ceiling of the approach control's delegated airspace excluding the ARSA and other airspace as appropriate. (See Controlled Airspace—Airport Radar Service Area / ARSA, Conflict Resolution)

**OUTER COMPASS LOCATOR—** (See Compass Locator)

**OUTER FIX—** A general term used within ATC to describe fixes in the terminal area, other than the final approach fix. Aircraft are normally cleared to these fixes by an Air Route Traffic Control Center or an Approach Control Facility. Aircraft are normally cleared from these fixes to the final approach fix or final approach course.

**OUTER MARKER/OM—** A marker beacon at or near the glide slope intercept altitude of an ILS approach. It is keyed to transmit two dashes per second on a 400 Hz tone, which is received aurally and visually by compatible airborne equipment. The OM is normally located four to seven miles from the runway threshold on the extended centerline of the runway. (See Marker Beacon, Instrument Landing System) (Refer to AIM)

***OVER—*** My transmission is ended; I expect a response.

**OVERHEAD APPROACH/360 OVERHEAD—** A series of predetermined maneuvers prescribed for VFR arrival of military aircraft (often in formation) for entry into the VFR traffic pattern and to proceed to a landing. The pattern usually specifies the following:

1. The radio contact required of the pilot.
2. The speed to be maintained.
3. An initial approach 3 to 5 miles in length.
4. An elliptical pattern consisting of two 180 degree turns.
5. A break point at which the first 180 degree turn is started.
6. The direction of turns.
7. Altitude (at least 500 feet above the conventional pattern).
8. A "Roll-out" on final approach not less than 1/4 mile from the landing threshold and not less than 300 feet above the ground.

**PAN-PAN—** The international radio-telephony urgency signal. When repeated three times, indicates uncertainty or alert followed by nature of urgency. (See MAYDAY) (Refer to AIM)

**PARALLEL ILS/MLS APPROACHES—** Approaches to parallel runways by IFR aircraft which, when established inbound toward the airport on the adjacent final approach courses, are radar-separated by at least 2 miles. (See Final Approach Course, Simultaneous ILS/MLS Approaches).

**PARALLEL OFFSET ROUTE—** A parallel track to the left or right of the designated or established airway/route. Normally associated with Area Navigation (RNAV) operations. (See Area Navigation)

**PARALLEL RUNWAYS—** Two or more runways at the same airport whose centerlines are parallel. In addition to runway number, parallel runways are designated as L (left) and R (right) or, if three parallel runways exist, L (left), C (center), and R (right).

**PERMANENT ECHO—** Radar signals reflected from fixed objects on the earth's surface; e.g., buildings, towers, terrain. Permanent echoes are distinguished from "ground clutter' by being definable locations rather than large areas. Under certain conditions they may be used to check radar alignment.

**PHOTO RECONNAISSANCE (PR)—** Military activity that requires locating individual photo targets and navigating to the targets at a preplanned angle and altitude. The activity normally requires a lateral route width of 16NM and altitude range of 1,500 feet to 10,000 feet AGL.

**PILOT BRIEFING/PRE-FLIGHT PILOT BRIEFING—** A service provided by the FSS to assist pilots in flight planning. Briefing items may include weather information, NOTAMS, military activities, flow control information, and other items as requested. (Refer to AIM)

**PILOT IN COMMAND—** The pilot responsible for the operation and safety of an aircraft during flight time. (Refer to FAR Part 91)

**PILOTS AUTOMATIC TELEPHONE WEATHER ANSWERING SERVICE/PATWAS—** A continuous telephone recording containing current and forecast weather information for pilots. (See Flight Service Station) (Refer to AIM)

***PILOT'S DISCRETION—*** When used in conjunction with altitude assignments, means that ATC has offered the pilot the option of starting climb or descent whenever he wishes and conducting the climb or descent at any rate he wishes. He may temporarily level off at any intermediate altitude. However, once he has vacated an altitude, he may not return to that altitude.

**PILOT WEATHER REPORT/PIREP—** A report of meteorological phenomena encountered by aircraft in flight. (Refer to AIM)

**POSITION REPORT/PROGRESS REPORT—** A report over a known location as transmitted by an aircraft to ATC. (Refer to AIM)

**POSITION SYMBOL—** A computer-generated indication shown on a radar display to indicate the mode of tracking.

**POSITIVE CONTROL—** The separation of all air traffic within designated airspace by air traffic control. (See Positive Control Area)

**POSITIVE CONTROL AREA/PCA—** (See Controlled Airspace)

**PRACTICE INSTRUMENT APPROACH—** An instrument approach procedure conducted by a VFR or an IFR aircraft for the purpose of pilot training or proficiency demonstrations.

**PRECIPITATION—** Any or all forms of water particles (rain, sleet, hail, or snow) that fall from the atmosphere and reach the surface.

**PRECISION APPROACH PROCEDURE/PRECISION APPROACH—** A standard instrument approach procedure in which an electronic glideslope/glidepath is provided; e.g., ILS/MLS and PAR. (See Instrument Landing System, Microwave Landing System, Precision Approach Radar)

**PRECISION APPROACH RADAR/PAR—** Radar equipment in some ATC facilities operated by the FAA and/or the military services at joint-use civil/military locations and separate military installations to detect and display azimuth, elevation, and range of aircraft on the final approach course to a runway. This equipment may be used to monitor certain nonradar approaches, but is primarily used to conduct a precision instrument approach (PAR) wherein the controller issues guidance instructions to the pilot based on the aircraft's position in relation to the final approach course (azimuth), the glidepath (elevation), and the distance (range) from the touchdown point on the runway as displayed on the radar scope. (See Glidepath, PAR) (Refer to AIM)

The abbreviation "PAR" is also used to denote preferential arrival routes in ARTCC computers. (See Preferential Routes)

*ICAO-PRECISION APPROACH RADAR/PAR*—Primary radar equipment used to determine the position of an aircraft during final approach, in terms of lateral and vertical deviations relative to a nominal approach path, and in range relative to touchdown.

**PREFERENTIAL ROUTES—** Preferential routes (PDR's, PAR's, and PDAR's) are adapted in ARTCC computers to accomplish inter/intrafacility controller coordination and to assure that flight data is posted at the proper control positions. Locations having a need for these specific inbound and outbound routes normally publish such routes in local facility bulletins, and their use by pilots minimizes flight plan route amendments. When the workload or traffic situation permits, controllers normally provide radar vectors or assign requested routes to minimize circuitous routing. Preferential routes are usually confined to one ARTCC's area and are referred to by the following names or acronyms:

1. Preferential Departure Route/PDR—A specific departure route from an airport or terminal area to an en route point where there is no further need for flow control. It may be included in a Standard Instrument Departure (SID) or a Preferred IFR Route.

2. Preferential Arrival Route/PAR—A specific arrival route from an appropriate en route point to an airport or terminal area. It may be included in a Standard Terminal Arrival (STAR) or a Preferred IFR Route. The abbreviation "PAR" is used primarily within the ARTCC and should not be confused with the abbreviation for Precision Approach Radar.

3. Preferential Departure and Arrival Route/PDAR—A route between two terminals which are within or immediately adjacent to one ARTCC's area. PDAR's are not synonomous with Preferred IFR Routes but may be listed as such as they do accomplish essentially the same purpose. (See Preferred IFR Routes, NAS Stage A)

**PREFERRED IFR ROUTES—** Routes established between busier airports to increase system efficiency and capacity. They normally extend through one or more ARTCC areas and are designed to achieve balanced traffic flows among high density terminals. IFR clearances are issued on the basis of these routes except when severe weather avoidance procedures or other factors dictate otherwise. Preferred IFR Routes are listed in the Airport/Facility Directory. If a flight is planned to or from an area having such routes but the departure or arrival point is not listed in the Airport/Facility Directory, pilots may use that part of a Preferred IFR Route which is appropriate for the departure or arrival point that is listed. Preferred IFR Routes are correlated with SID's and STAR's and may be defined by airways, jet routes, direct routes between NAVAID's, Waypoints, NAVAID radials/DME, or any combinations thereof. (See Standard Instrument Departure, Standard Terminal Arrival, Preferential Routes, Center's Area) (Refer to Airport/Facility Directory and Notices to Airmen Publication)

**PREVAILING VISIBILITY—** (See Visibility)

**PROCEDURE TURN INBOUND—** That point of a procedure turn maneuver where course reversal has been completed and an aircraft is established inbound on the intermediate approach segment or final approach course. A report of "procedure turn inbound" is normally used by ATC as a position report for separation purposes. (See Final Approach Course, Procedure Turn, Segments of an Instrument Approach Procedure)

**PROCEDURE TURN/PT—** The maneuver prescribed when it is necessary to reverse direction to establish an aircraft on the intermediate approach segment or final approach course. The outbound course, direction of turn, distance within which the turn must be completed, and minimum altitude are specified in the procedure. However, unless otherwise restricted, the point at which the turn may be commenced and the type and rate of turn are left to the discretion of the pilot.

*ICAO—PROCEDURE TURN—* A maneuver in which a turn is made away from a designated track followed by a turn in the opposite direction, both turns being executed so as to permit the aircraft to intercept and proceed along the reciprocal of the designated track.

**PROFILE DESCENT—** An uninterrupted descent (except where level flight is required for speed adjustment; e.g., 250 knots at 10,000 feet MSL) from cruising altitude/level to interception of a glide slope or to a minimum altitude specified for the initial or intermediate approach segment of a nonprecision instrument approach. The profile descent normally terminates at the approach gate or where the glide slope or other appropriate minimum altitude is intercepted.

**PROGRAMMABLE INDICATOR DATA PROCESSOR/PIDP—** The PIDP is a modification to the AN/TPX-42 interrogator system currently installed in fixed RAPCON's. The PIDP detects, tracks, and predicts secondary radar aircraft targets. These are displayed by means of computer-generated symbols and alphanumeric characters depicting flight identification, aircraft altitude, ground speed, and flight plan data. Although primary radar targets are not tracked, they are displayed coincident with the secondary radar targets as well as with the other symbols and alphanumerics. The system has the capability of interfacing with ARTCC's.

**PROHIBITED AREA—** (See Special Use Airspace).

*ICAO—PROHIBITED AREA—* An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

**PROPOSED BOUNDARY CROSSING TIME/PBCT—** Each center has a PBCT parameter for each internal airport. Proposed internal flight plans are transmitted to the adjacent center if the flight time along the proposed route from the departure airport to the center boundary is less than or equal to the value of PBCT or if airport adaptation specifies transmission regardless of PBCT.

**PUBLISHED ROUTE—** A route for which an IFR altitude has been established and published; e.g., Federal Airways, Jet Routes, Area Navigation Routes, Specified Direct Routes.

**QUADRANT—** A quarter part of a circle, centered on a NAVAID, oriented clockwise from magnetic north as follows: NE quadrant 000-089, SE quadrant 090-179, SW quadrant 180-269, NW quadrant 270-359.

**QUICK LOOK—** A feature of NAS Stage A and ARTS which provides the controller the capability to display full data blocks of tracked aircraft from other control positions.

**QUOTA FLOW CONTROL/QFLOW—** A flow control procedure by which the Central Flow Control Function (CFCF) restricts traffic to the ARTC Center area having an impacted airport, thereby avoiding sector/area saturation. (See Air Traffic Control Systems Command Center) (Refer to Airport/Facility Directory)

**RADAR/RADIO DETECTION AND RANGING—** A device which, by measuring the time interval between transmission and reception of radio pulses and correlating the angular orientation of the radiated antenna beam or beams in azimuth and/or elevation, provides information on range, azimuth, and/or elevation of objects in the path of the transmitted pulses.

1. Primary Radar—A radar system in which a minute portion of a radio pulse transmitted from a site is reflected by an object and then received back at that site for processing and display at an air traffic control facility.
2. Secondary Radar/Radar Beacon/ATCRBS—A radar system in which the object to be detected is fitted with cooperative equipment in the form of a radio receiver/transmitter (transponder). Radar pulses transmitted from the searching transmitter/receiver (interrogator) site are received in the cooperative equipment and used to trigger a distinctive transmission from the transponder. This reply transmission, rather than a reflected signal, is then received back at the transmitter/receiver site for processing and display at an air traffic control facility. (See Transponder, Interrogator) (Refer to AIM)

*ICAO—RADAR—* A radio detection device which provides information on range, azimuth, and/or elevation of objects.

1. Primary Radar—A radar system which uses reflected radio signals.
2. Secondary Radar—A radar system wherein a radio signal transmitted from a radar station initiates the transmission of a radio signal from another station.

**RADAR ADVISORY—** The provision of advice and information based on radar observations. (See Advisory Service)

**RADAR APPROACH—** An instrument approach procedure which utilizes Precision Approach Radar (PAR) or Airport Surveillance Radar (ASR). (See PAR Approach, Surveillance Approach, Airport Surveillance Radar, Precision Approach Radar, Instrument Approach Procedure) (Refer to AIM)

*ICAO—RADAR APPROACH—* An approach, executed by an aircraft, under the direction of a radar controller.

**RADAR APPROACH CONTROL FACILITY—** A terminal ATC facility that uses radar and nonradar capabilities to provide approach control services to aircraft arriving, departing, or transiting airspace controlled by the facility (see Approach Control Service). Provides radar ATC services to aircraft operating in the vicinity of one or more civil and/ or military airports in a terminal area. The facility may provide services of a ground controlled approach (GCA); i.e., ASR and PAR approaches. A radar approach control facility may be operated by FAA, USAF, US Army, USN, USMC, or jointly by FAA and a military service. Specific facility nomenclatures are used for administrative purposes only and are related to the physical location of the facility and the operating service generally as follows:

Army Radar Approach Control/ARAC (Army).

Radar Air Traffic Control Facility/ RATCF (Navy/FAA).

Radar Approach Control/RAPCON (Air Force/ FAA).

Terminal Radar Approach Control/TRACON (FAA).

Tower/Airport Traffic Control Tower/ATCT (FAA). (Only those towers delegated approach control authority.)

**RADAR ARRIVAL—** An arriving aircraft which is being vectored to the final approach course for an instrument approach or toward the airport for a visual approach. (See Radar Approach, Visual Approach)

**RADAR BEACON—** (See Radar)

***RADAR CONTACT—***

1. Used by ATC to inform an aircraft that it is identified on the radar display and radar flight following will be provided until radar identification is terminated. Radar service may also be provided within the limits of necessity and capability. When a pilot is informed of "radar contact," he automatically discontinues reporting over compulsory reporting points. (See Radar Flight Following, Radar Contact Lost, Radar Service, Radar Service Terminated). (Refer to AIM)
2. The term used to inform the controller that the aircraft is identified and approval is granted for the aircraft to enter the receiving controllers airspace.

*ICAO—RADAR CONTACT—* The situation which exists when the radar blip of a particular aircraft is seen and identified on a radar display.

***RADAR CONTACT LOST—*** Used by ATC to inform a pilot that radar identification of his aircraft has been lost. The loss may be attributed to several things including the aircraft's merging with weather or ground clutter, the aircraft's flying below radar line of sight, the aircraft's entering an area of poor radar return, or a failure of the aircraft transponder or the ground radar equipment. (See Clutter, Radar Contact)

**RADAR ENVIRONMENT—** An area in which radar service may be provided. (See Radar Contact, Radar Service, Additional Services, Traffic Advisories)

**RADAR FLIGHT FOLLOWING—** The observation of the progress of radar identified aircraft, whose primary navigation is being provided by the pilot, wherein the controller retains and correlates the aircraft identity with the appropriate target or target symbol displayed on the radar scope. (See Radar Contact, Radar Service) (Refer to AIM)

**RADAR IDENTIFICATION—** The process of ascertaining that an observed radar target is the radar return from a particular aircraft. (See Radar Contact, Radar Service)

*ICAO—RADAR IDENTIFICATION—*The process of correlating a particular radar blip with a specific aircraft.

**RADAR IDENTIFIED AIRCRAFT—** An aircraft, the position of which has been correlated with an observed target or symbol on the radar display. (See Radar Contract, Radar Contact Lost)

**RADAR MONITORING—** (See Radar Service)

**RADAR NAVIGATIONAL GUIDANCE—** (See Radar Service)

**RADAR POINT OUT/POINT OUT—** Used between controllers to indicate radar handoff action where the initiating controller plans to retain communications with an aircraft penetrating the other controller's airspace and additional coordination is required.

**RADAR ROUTE—** A flight path or route over which an aircraft is vectored. Navigational guidance and altitude assignments are provided by ATC. (See Flight Path, Route)

**RADAR SEPARATION—** (See Radar Service)

**RADAR SERVICE—** A term which encompasses one or more of the following services based on the use of radar which can be provided by a controller to a pilot of a radar identified aircraft.

1. Radar Separation.—Radar spacing of aircraft in accordance with established minima.

*ICAO—RADAR SEPARATION—* The separation used when aircraft position information is derived from radar sources.

2. Radar Navigational Guidance.—Vectoring aircraft to provide course guidance.
3. Radar Monitoring.—The radar flight-following of aircraft, whose primary navigation is being performed by the pilot, to observe and note deviations from its authorized flight path, airway, or route. When being applied specifically to radar monitoring of instrument approaches; i.e., with precision approach radar (PAR) or radar monitoring of simultaneous ILS/MLS approaches, it includes advice and instructions whenever an aircraft nears or exceeds the prescribed PAR safety limit or simultaneous ILS/MLS no transgression zone. (See Additional Services, Traffic Advisories)

*ICAO—RADAR MONITORING—* The use of radar for the purpose of providing aircraft with information and advice relative to significant deviations from nominal flight path.

*ICAO—RADAR SERVICE—* Term used to indicate a service provided directly by means of radar.

***RADAR SERVICE TERMINATED—*** Used by ATC to inform a pilot that he will no longer be provided any of the services that could be received while in radar contact. Radar service is automatically terminated, and the pilot is not advised in the following cases:

1. An aircraft cancels its IFR flight plan, except within a TCA, TRSA, ARSA, or where Stage II service is provided.
2. An aircraft conducting an instrument, visual, or contact approach has landed or has been instructed to change to advisory frequency.
3. An arriving VFR aircraft, receiving radar service to a tower-controlled airport within a TCA, TRSA, ARSA, or where Stage II service is provided, has landed; or to all other airports, is instructed to change to tower or advisory frequency.
4. An aircraft completes a radar approach.

**RADAR SURVEILLANCE—** The radar observation of a given geographical area for the purpose of performing some radar function.

**RADAR TRAFFIC ADVISORIES—** (See Traffic Advisories)

**RADAR TRAFFIC INFORMATION SERVICE—** (See Traffic Advisories)

**RADAR WEATHER ECHO INTENSITY LEVELS—** Existing radar systems cannot detect turbulence. However, there is a direct correlation between the degree of turbulence and other weather features associated with thunderstorms and the radar weather echo intensity. The National Weather Service has categorized six (6) levels of radar weather echo intensity. The following list gives the weather features likely to be associated with these levels during thunderstorm weather situations:

1. Level 1 (WEAK) and Level 2 (MODERATE). Light to moderate turbulence is possible with lightning.
2. Level 3 (STRONG). Severe turbulence possible, lightning.
3. Level 4 (VERY STRONG). Severe turbulence likely, lightning.
4. Level 5 (INTENSE). Severe turbulence, lightning, organized wind gusts. Hail likely.
5. Level 6 (EXTREME). Severe turbulence, large hail, lightning, extensive wind gusts, and turbulence.

**RADIAL—** A magnetic bearing extending from a VOR/VORTAC/TACAN navigation facility.

**RADIO—**

1. A device used for communication.
2. Used to refer to a flight service station; e.g., "Seattle Radio" is used to call Seattle FSS.

**RADIO ALTIMETER/RADAR ALTIMETER—** Aircraft equipment which makes use of the reflection of radio waves from the ground to determine the height of the aircraft above the surface.

**RADIO BEACON—** (See Nondirectional Beacon)

**RADIO MAGNETIC INDICATOR/RMI—** An aircraft navigational instrument coupled with a gyro compass or similar compass that indicates the direction of a selected NAVAID and indicates bearing with respect to the heading of the aircraft.

**RAMP—** (See Apron)

***READ BACK—*** Repeat my message back to me.

**RECEIVING CONTROLLER/FACILITY—** A controller/facility receiving control of an aircraft from another controller/facility.

***REDUCE SPEED TO (SPEED)—*** (See Speed Adjustment)

**RELEASE TIME—** A departure time restriction issued to a pilot by ATC (either directly or through an authorized relay) when necessary to separate a departing aircraft from other traffic.

*ICAO—RELEASE TIME—*Time prior to which an aircraft should be given further clearance or prior to which it should not proceed in case of radio failure.

**REMOTE COMMUNICATIONS AIR/GROUND FACILITY/RCAG—** An unmanned VHF/UHF transmitter/receiver facility which is used to expand ARTCC air/ground communications coverage and to facilitate direct contact between pilots and controllers. RCAG facilities are sometimes not equipped with emergency frequencies 121.5 MHz and 243.0 MHz. (Refer to AIM)

**REMOTE COMMUNICATIONS OUTLET/RCO AND REMOTE TRANSMITTER/RECEIVER/RTR—** An unmanned communications facility remotely controlled by air traffic personnel. RCO's serve FSS's. RTR's serve terminal ATC facilities. An RCO or RTR may be UHF or VHF and will extend the communication range of the air traffic facility. There are several classes of RCO's and RTR's. The class is determined by the number of transmitters or receivers. Classes A through G are used primarily for air/ground purposes. RCO and RTR class O facilities are nonprotected outlets subject to undetected and prolonged outages. RCO (O's) and RTR (O's) were established for the express purpose of providing ground-to-ground communications between air traffic control specialists and pilots located at a satellite airport for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times. As a secondary function, they may be used for advisory purposes whenever the aircraft is below the coverage of the primary air/ground frequency.

**REMOTE TRANSMITTER/RECEIVER/RTR—** (See Remote Communications Outlet)

***REPORT—*** Used to instruct pilots to advise ATC of specified information; e.g., "Report passing Hamilton VOR."

**REPORTING POINT—** A geographical location in relation to which the position of an aircraft is reported. (See Compulsory Reporting Point) (Refer to AIM)

*ICAO—REPORTING POINT—* A specified geographical location in relation to which the position of an aircraft can be reported.

***REQUEST FULL ROUTE CLEARANCE/FRC—*** Used by pilots to request that the entire route of flight be read verbatim in an ATC clearance. Such request should be made to preclude receiving an ATC clearance based on the original filed flight plan when a filed IFR flight plan has been revised by the pilot, company, or operations prior to departure.

**RESCUE COORDINATION CENTER/RCC—** A search and rescue (SAR) facility equipped and manned to coordinate and control SAR operations in an area designated by the SAR plan. The U.S. Coast Guard and the U.S. Air Force have responsibility for the operation of RCC's.

*ICAO—RESCUE CO-ORDINATION CENTRE—* A unit responsible for promoting efficient organization of search and rescue service and for co-ordinating the conduct of search and rescue operations within a search and rescue region.

**RESTRICTED AREA—** (See Special Use Airspace).

*ICAO—RESTRICTED AREA—*Airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

***RESUME OWN NAVIGATION—*** Used by ATC to advise a pilot to resume his own navigational responsibility. It is issued after completion of a radar vector or when radar contact is lost while the aircraft is being radar vectored. (See Radar Contact Lost, Radar Service Terminated)

**RNAV—** (See Area Navigation)

**RNAV APPROACH—** An instrument approach procedure which relies on aircraft area navigation equipment for navigational guidance. (See Instrument Approach Procedure, Area Navigation)

**ROAD RECONNAISSANCE (RC)—** Military activity requiring navigation along roads, railroads, and rivers. Reconnaissance route/route segments are seldom along a straight line and normally require a lateral route width of 10NM to 30NM and an altitude range of 500 feet to 10,000 feet AGL.

***ROGER—*** I have received all of your last transmission. It should not be used to answer a question requiring a yes or a no answer. (See Affirmative, Negative)

**ROLLOUT RVR—** (See Visibility)

**ROUTE—** A defined path, consisting of one or more courses in a horizontal plane, which aircraft traverse over the surface of the earth. (See Airway, Jet Route, Published Route, Unpublished Route)

**ROUTE SEGMENT—** As used in Air Traffic Control, a part of a route that can be defined by two navigational fixes, two NAVAID's, or a fix and a NAVAID. (See Fix, Route)

*ICAO—ROUTE SEGMENT—*A portion of a route to be flown, as defined by two consecutive significant points specified in a flight plan.

**RUNWAY—** A defined rectangular area on a land airport prepared for the landing and takeoff run of aircraft along its length. Runways are normally numbered in relation to their magnetic direction rounded off to the nearest 10 degrees; e.g., Runway 01, Runway 25. (See Parallel Runways)

*ICAO—RUNWAY—*A defined rectangular area, on a land aerodrome prepared for the landing and takeoff run of aircraft along its length.

**RUNWAY CENTERLINE LIGHTING—** (See Airport Lighting)

**RUNWAY CONDITION READING/RCR—** Numerical decelerometer readings relayed by air traffic controllers at USAF and certain civil bases for use by the pilot in determining runway braking action. These readings are routinely relayed only to USAF and Air National Guard Aircraft. (See Braking Action)

**RUNWAY END IDENTIFIER LIGHTS—** (See Airport Lighting)

**RUNWAY GRADIENT—** The average slope, measured in percent, between two ends or points on a runway. Runway gradient is depicted on Government aerodrome sketches when total runway gradient exceeds 0.3%.

***RUNWAY HEADING—*** The magnetic direction indicated by the runway number. When cleared to "fly/maintain runway heading," pilots are expected to comply with the ATC clearance by flying the heading indicated by the runway number without applying any drift correction; e.g., Runway 4, 040° magnetic heading; Runway 20, 200° magnetic heading.

**RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY—** Any runway or runways currently being used for takeoff or landing. When multiple runways are used, they are all considered active runways.

**RUNWAY LIGHTS—** (See Airport Lighting)

**RUNWAY MARKINGS—** (See Airport Marking Aids.)

**RUNWAY PROFILE DESCENT—** An instrument flight rules (IFR) air traffic control arrival procedure to a runway published for pilot use in graphic and/or textual form and may be associated with a STAR. Runway Profile Descents provide routing and may depict crossing altitudes, speed restrictions, and headings to be flown from the en route structure to the point where the pilot will receive clearance for and execute an instrument approach procedure. A Runway Profile Descent may apply to more than one runway if so stated on the chart. (Refer to AIM)

**RUNWAY USE PROGRAM—** A noise abatement runway selection plan designed to enhance noise abatement efforts with regard to airport communities for arriving and departing aircraft. These plans are developed into runway use programs and apply to all turbojet aircraft 12,500 pounds or heavier; turbojet aircraft less than 12,500 pounds are included only if the airport proprietor determines that the aircraft creates a noise problem. Runway use programs are coordinated with FAA offices, and safety criteria used in these programs are developed by the Office of Flight Operations. Runway use programs are administered by the Air Traffic Service as "Formal" or "Informal" programs.

1. Formal Runway Use Program—An approved noise abatement program which is defined and acknowledged in a Letter of Understanding between Flight Operations, Air Traffic Service, the

airport proprietor, and the users. Once established, participation in the program is mandatory for aircraft operators and pilots as provided for in FAR 91.87.

2. Informal Runway Use Program—An approved noise abatement program which does not require a Letter of Understanding, and participation in the program is voluntary for aircraft operators/pilots.

**RUNWAY VISIBILITY VALUE**— (See Visibility)

**RUNWAY VISUAL RANGE**— (See Visibility)

**SAFETY ALERT**— A safety alert issued by ATC to aircraft under their control if ATC is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain, obstructions, or other aircraft. The controller may discontinue the issuance of further alerts if the pilot advises he is taking action to correct the situation or has the other aircraft in sight.

1. Terrain/Obstruction Alert—A safety alert issued by ATC to aircraft under their control if ATC is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain/obstructions; e.g., "Low Altitude Alert, check your altitude immediately."
2. Aircraft Conflict Alert—A safety alert issued by ATC to aircraft under their control if ATC is aware of an aircraft that is not under their control at an altitude which, in the controller's judgment, places both aircraft in unsafe proximity to each other. With the alert, ATC will offer the pilot an alternate course of action when feasible; e.g., "Traffic Alert, advise you turn right heading zero niner zero or climb to eight thousand immediately."

The issuance of a safety alert is contingent upon the capability of the controller to have an awareness of an unsafe condition. The course of action provided will be predicated on other traffic under ATC control. Once the alert is issued, it is solely the pilot's prerogative to determine what course of action, if any, he will take.

**SAIL BACK**— A maneuver during high wind conditions (usually with power off) where float plane movement is controlled by water rudders/opening and closing cabin doors.

***SAY AGAIN***— Used to request a repeat of the last transmission. Usually specifies transmission or portion thereof not understood or received; e.g., "Say again all after ABRAM VOR."

***SAY ALTITUDE***— Used by ATC to ascertain an aircraft's specific altitude/flight level. When the aircraft is climbing or descending, the pilot should state the indicated altitude rounded to the nearest 100 feet.

***SAY HEADING***— Used by ATC to request an aircraft heading. The pilot should state the actual heading of the aircraft.

**SEA LANE**— A designated portion of water outlined by visual surface markers for and intended to be used by aircraft designed to operate on water.

**SEARCH AND RESCUE FACILITY**— A facility responsible for maintaining and operating a search and rescue (SAR) service to render aid to persons and property in distress. It is any SAR unit, station, NET, or other operational activity which can be usefully employed during an SAR Mission; e.g., a Civil Air Patrol Wing, or a Coast Guard Station. (See Search and Rescue)

**SEARCH AND RESCUE/SAR**— A service which seeks missing aircraft and assists those found to be in need of assistance. It is a cooperative effort using the facilities and services of available Federal, state and local agencies. The U.S. Coast Guard is responsible for coordination of search and rescue for the Maritime Region, and the U.S. Air Force is responsible for search and rescue for the Inland Region. Information pertinent to search and rescue should be passed through any air traffic facility or be transmitted directly to the Rescue Coordination Center by telephone. (See Flight Service Station, Rescue Coordination Center) (Refer to AIM)

**SEE AND AVOID**— A visual procedure wherein pilots of aircraft flying in visual meteorological conditions (VMC), regardless of type of flight plan, are charged with the responsibility to observe the presence of other aircraft and to maneuver their aircraft as required to avoid the other aircraft. Right-of-way rules are contained in FAR, Part 91. (See Instrument Flight Rules, Visual Flight Rules, Visual Meteorological Conditions, Instrument Meteorological Conditions)

**SEGMENTED CIRCLE**— A system of visual indicators designed to provide traffic pattern information at airports without operating control towers. (Refer to AIM)

**SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE**— An instrument approach procedure may have as many as four separate segments depending on how the approach procedure is structured.

1. Initial Approach—The segment between the initial approach fix and the intermediate fix or the point where the aircraft is established on the intermediate course or final approach course.
2. Intermediate Approach—The segment between the intermediate fix or point and the final approach fix.
3. Final Approach—The segment between the final approach fix or point and the runway, airport, or missed approach point.
4. Missed Approach—The segment between the missed approach point or the point of arrival at decision height and the missed approach fix at the prescribed altitude. (Refer to FAR, Part 97)

*ICAO*

1. *Initial Approach*—That part of an instrument approach procedure consisting of the first approach to the first navigational facility associated with the procedure, or to a predetermined fix.
2. *Intermediate Approach*—That part of an instrument approach procedure from the first arrival

at the first navigational facility or predetermined fix, to the beginning of the final approach.

3. *Final Approach*—That part of an instrument approach procedure from the time the aircraft has:
   - a. Completed the last procedure turn or base turn where one is specified, or
   - b. Crossed a specified fix, or
   - c. Intercepted the last track specified for the procedures until it has crossed a point in the vicinity of an aerodrome from which:
     - (1) A landing can be made, or
     - (2) A missed approach procedure is initiated.
4. *Missed Approach Procedure*—The procedure to be followed if, after an instrument approach, a landing is not effected and occurring normally:
   - a. When the aircraft has descended to the decision height and has not established visual contact, or
   - b. When directed by air traffic control to pull up or to go around again.

**SEPARATION—** In air traffic control, the spacing of aircraft to achieve their safe and orderly movement in flight and while landing and taking off. (See Separation Minima)

*ICAO—SEPARATION*—Spacing between aircraft, levels or tracks.

**SEPARATION MINIMA—** The minimum longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of air traffic control procedures. (See Separation)

**SEVERE WEATHER AVOIDANCE PLAN/SWAP—** An approved plan to minimize the affect of severe weather on traffic flows in impacted terminal and/or ARTCC areas. SWAP is normally implemented to provide the least disruption to the ATC system when flight through portions of airspace is difficult or impossible due to severe weather.

**SHORT RANGE CLEARANCE—** A clearance issued to a departing IFR flight which authorizes IFR flight to a specific fix short of the destination while air traffic control facilities are coordinating and obtaining the complete clearance.

**SHORT TAKEOFF AND LANDING AIRCRAFT/ STOL AIRCRAFT—** An aircraft which, at some weight within its approved operating weight, is capable of operating from a STOL runway in compliance with the applicable STOL characteristics, airworthiness, operations, noise, and pollution standards. (See Vertical Takeoff and Landing Aircraft)

**SIDESTEP MANEUVER—** A visual maneuver accomplished by a pilot at the completion of an instrument approach to permit a straight-in landing on a parallel runway not more than 1,200 feet to either side of the runway to which the instrument approach was conducted. (Refer to AIM)

***SIGMET* /WS/SIGNIFICANT METEOROLOGICAL INFORMATION—** A weather advisory issued concerning weather significant to the safety of all aircraft. SIGMET advisories cover severe and extreme turbulence, severe icing, and widespread dust or sandstorms that reduce visibility to less than 3 miles. (See AIRMET and Convective SIGMET) (Refer to AIM).

*ICAO—SIGMET INFORMATION*— Information prepared by a meteorological watch office regarding the occurrence or expected occurrence of one or more of the following phenomena:

1. At subsonic cruising levels:

   Active thunderstorm area.
   Tropical revolving storm.
   Severe line squall.
   Heavy hail.
   Severe turbulence.
   Severe icing.
   Marked mountain waves.
   Widespread sandstorm/duststorm.

2. At transonic levels and supersonic cruising levels:

   Moderate or severe turbulence.
   Cumulonimbus clouds.
   Hail.

**SIMPLIFIED DIRECTIONAL FACILITY/SDF—** A NAVAID used for nonprecision instrument approaches. The final approach course is similar to that of an ILS localizer except that the SDF course may be offset from the runway, generally not more than 3 degrees, and the course may be wider than the localizer, resulting in a lower degree of accuracy. (Refer to AIM)

**SIMULATED FLAMEOUT/SFO—** A practice approach by a jet aircraft (normally military) at idle thrust to a runway. The approach may start at a relatively high altitude over a runway (high key) and may continue on a relatively high and wide downwind leg with a high rate of descent and a continuous turn to final. It terminates in a landing or low approach. The purpose of this approach is to simulate a flameout. (See Flameout)

**SIMULTANEOUS ILS/MLS APPROACHES—** An approach system permitting simultaneous ILS/MLS approaches to airports having parallel runways separated by at least 4,300 feet between centerlines. Integral parts of a total system are ILS/MLS, radar, communications, ATC procedures, and appropriate airborne equipment. (See Parallel Runways) (Refer to AIM)

**SINGLE DIRECTION ROUTES—** Preferred IFR Routes which are sometimes depicted on high altitude en route charts and which are normally flown in one direction only. (See Preferred IFR Route) (Refer to Airport/Facility Directory)

**SINGLE FREQUENCY APPROACH/SFA—** A service provided under a letter of agreement to military single-piloted turbojet aircraft which permits use of a single UHF frequency during approach for landing. Pilots will not normally be required to change frequency from the beginning of the approach to touchdown except that pilots conducting an en route descent are required to change frequency when control is transferred from the air route traffic control center to the terminal facility. The abbreviation "SFA" in the DOD FLIP IFR Supplement under "Communications" indicates this service is available at an aerodrome.

**SINGLE-PILOTED AIRCRAFT—** A military turbojet aircraft possessing one set of flight controls, tandem cockpits, or two sets of flight controls but operated by one pilot is considered single-piloted by ATC when determining the appropriate air traffic service to be applied. (See Single Frequency Approach)

**SLASH—** A radar beacon reply displayed as an elongated target.

**SLOW TAXI—** To taxi a float plane at low power or low RPM.

***SPEAK SLOWER—*** Used in verbal communications as a request to reduce speech rate.

**SPECIAL EMERGENCY—** A condition of air piracy or other hostile act by a person(s) aboard an aircraft which threatens the safety of the aircraft or its passengers.

**SPECIAL IFR—** (See Fixed-Wing Special IFR)

**SPECIAL INSTRUMENT APPROACH PROCEDURE—** (See Instrument Approach Procedure)

**SPECIAL USE AIRSPACE—** Airspace of defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. TYPES OF SPECIAL USE AIRSPACE:

1. Alert Area—Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft. Alert Areas are depicted on aeronautical charts for the information of nonparticipating pilots. All activities within an Alert Area are conducted in accordance with Federal Aviation Regulations, and pilots of participating aircraft as well as pilots transiting the area are equally responsible for collision avoidance.
2. Controlled Firing Area—Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons and property on the ground.
3. Military Operations Area (MOA)—An MOA is an airspace assignment of defined vertical and lateral dimensions established outside positive control areas to separate/segregate certain military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. (Refer to AIM).
4. Prohibited Area—Designated airspace within which the flight of aircraft is prohibited. (Refer to En Route Charts, AIM).
5. Restricted Area—Airspace designated under FAR, Part 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use and IFR/VFR operations in the area may be authorized by the controlling ATC facility when it is not being utilized by the using agency. Restricted areas are depicted on en route charts. Where joint use is authorized, the name of the ATC controlling facility is also shown. (Refer to FAR, Part 73 and AIM)
6. Warning Area—Airspace which may contain hazards to nonparticipating aircraft in international airspace.

**SPECIAL VFR CONDITIONS—** Weather conditions in a control zone which are less than basic VFR and in which some aircraft are permitted flight under Visual Flight Rules. (See Special VFR Operations) (Refer to FAR, Part 91)

**SPECIAL VFR OPERATIONS—** Aircraft operating in accordance with clearances within control zones in weather conditions less than the basic VFR weather minima. Such operations must be requested by the pilot and approved by ATC. (See Special VFR Conditions)

*ICAO—SPECIAL VFR FLIGHT—*A controlled VFR flight authorized by air traffic control to operate within a control zone under meteorological conditions below the visual meteorological conditions.

**SPEED—** (See Airspeed, Groundspeed)

**SPEED ADJUSTMENT—** An ATC procedure used to request pilots to adjust aircraft speed to a specific value for the purpose of providing desired spacing. Pilots are expected to maintain a speed of plus or minus 10 knots or 0.02 mach number of the specified speed.

Examples of speed adjustments are:

1. "Increase/reduce speed to mach point (number)."
2. "Increase/reduce speed to (speed in knots)" or "Increase/reduce speed (number of knots) knots."
3. "If practical, reduce speed to (speed);" or "If practical, reduce speed (number of) knots."

**SPEED BRAKES/DIVE BRAKES—** Moveable aerodynamic devices on aircraft that reduce airspeed during descent and landing.

***SQUAWK (Mode, Code, Function)—*** Activate specific modes/codes/functions on the aircraft transponder; e.g., "Squawk three/alpha, two one zero five, low." (See Transponder)

**STAGE I/II/III SERVICE—** (See Terminal Radar Program)

**STANDARD INSTRUMENT APPROACH PROCEDURE/SIAP—** (See Instrument Approach Procedure)

**STANDARD INSTRUMENT DEPARTURE/SID—** A preplanned instrument flight rule (IFR) air traffic control departure procedure printed for pilot use in graphic and/or textual form. SID's provide transition from the terminal to the appropriate en route structure. (See IFR Takeoff Minima and Departure Procedures) (Refer to AIM)

**STANDARD RATE TURN—** A turn of three degrees per second.

**STANDARD TERMINAL ARRIVAL/STAR—** A preplanned instrument flight rule (IFR) air traffic control arrival procedure published for pilot use in graphic and/or textual form. STAR's provide transition from the en route structure to an outer fix or an instrument approach fix/arrival waypoint in the terminal area.

***STAND BY—*** Means the controller or pilot must pause for a few seconds, usually to attend to other duties of a higher priority. Also means to wait as in "stand by for clearance." If a delay is lengthy, the caller should reestablish contact.

**STATIONARY RESERVATIONS—** Altitude reservations which encompass activities in a fixed area. Stationary reservations may include activities, such as special tests of weapons systems or equipment, certain U.S. Navy carrier, fleet, and anti-submarine operations, rocket, missile and drone operations, and certain aerial refueling or similar operations.

**STEPDOWN FIX—** A fix permitting additional descent within a segment of an instrument approach procedure by identifying a point at which a controlling obstacle has been safely overflown.

**STEP TAXI—** To taxi a float plane at full power or high RPM.

**STEP TURN—** A maneuver used to put a float plane in a planing configuration prior to entering an active sea lane for takeoff. The STEP TURN maneuver should only be used upon pilot request.

**STEREO ROUTE—** A routinely used route of flight established by users and ARTCC's identified by a coded name; e.g., ALPHA 2. These routes minimize flight plan handling and communications.

***STOP ALTITUDE SQUAWK—*** Used by ATC to inform an aircraft to turn-off the automatic altitude reporting feature of its transponder. It is issued when the verbally reported altitude varies 300 feet or more from the automatic altitude report. (See Altitude Readout, Transponder)

**STOP AND GO—** A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. (See Low Approach, Option Approach)

**STOPOVER FLIGHT PLAN—** A flight plan format which permits in a single submission the filing of a sequence of flight plans through interim full-stop destinations to a final destination.

***STOP SQUAWK (Mode or Code)—*** Used by ATC to tell the pilot to turn specified functions of the aircraft transponder off. (See Stop Altitude Squawk, Transponder)

***STOP STREAM/BURST/BUZZER—*** Used by ATC to request a pilot to suspend electronic countermeasure activity. (See Jamming)

**STOPWAY—** An area beyond the takeoff runway designated by the airport authorities as able to support an airplane during an aborted takeoff. (Refer to FAR, Part 1)

**STRAIGHT-IN APPROACH—IFR—** An instrument approach wherein final approach is begun without first having executed a procedure turn, not necessarily completed with a straight-in landing or made to straight-in landing minimums. (See Straight-in Landing, Landing Minimums, Straight-in Approach-VFR)

**STRAIGHT-IN APPROACH—VFR—** Entry into the traffic pattern by interception of the extended runway centerline (final approach course) without executing any other portion of the traffic pattern. (See Traffic Pattern)

**STRAIGHT-IN LANDING—** A landing made on a runway aligned within 30° of the final approach course following completion of an instrument approach. (See Straight-in Approach-IFR)

**STRAIGHT-IN LANDING MINIMUMS/STRAIGHT-IN MINIMUMS—** (See Landing Minimums)

**SUBSTITUTE ROUTE—** A route assigned to pilots when any part of an airway or route is unusable because of NAVAID status. These routes consist of:

1. Substitute routes which are shown on U.S. Government charts.
2. Routes defined by ATC as specific NAVAID radials or courses.
3. Routes defined by ATC as direct to or between NAVAID's.

**SUNSET AND SUNRISE—** The mean solar times of sunset and sunrise as published in the Nautical Almanac, converted to local standard time for the locality concerned. Within Alaska, the end of evening civil twilight and the beginning of morning civil twilight, as defined for each locality.

**SUPER HIGH FREQUENCY/SHF—**The frequency band between 3 and 30 gigahertz (gHz). The elevation and azimuth stations of the microwave landing system operate from 5031MHz to 5091MHz in this spectrum.

**SURVEILLANCE APPROACH—** An instrument approach wherein the air traffic controller issues instructions, for pilot compliance, based on aircraft position in relation to the final approach course (azimuth), and the distance (range) from the end of the runway as displayed on the controller's radar scope. The controller will provide recommended altitudes on final approach if requested by the pilot. (See PAR Approach) (Refer to AIM)

**SYSTEM STRATEGIC NAVIGATION (SN)—** Military activity accomplished by navigating along a preplanned route using internal aircraft systems to maintain a desired track. This activity normally requires a lateral route width of 10NM and altitude range of 1,000 feet to 6,000 feet AGL with some route segments that permit terrain following.

**TACAN-ONLY AIRCRAFT—** An aircraft, normally military, possessing TACAN with DME but no VOR navigational system capability. Clearances must specify TACAN or VORTAC fixes and approaches.

**TACTICAL AIR NAVIGATION/TACAN—** An ultrahigh frequency electronic rho-theta air navigation aid which provides suitably equipped aircraft a continuous indication of bearing and distance to the TACAN station. (See VORTAC) (Refer to AIM)

**TARGET—** The indication shown on a radar display resulting from a primary radar return or a radar beacon reply. (See Radar, Target Symbol)

*ICAO—TARGET*—In radar:

1. Generally, any discrete object which reflects or retransmits energy back to the radar equipment.
2. Specifically, an object of radar search or surveillance.

**TARGET SYMBOL—** A computer-generated indication shown on a radar display resulting from a primary radar return or a radar beacon reply.

**TAXI—** The movement of an airplane under its own power on the surface of an airport (FAR Part 135.100-Note). Also, it describes the surface movement of helicopters equipped with wheels. (See Air Taxi, Hover Taxi) (Refer to AIM)

***TAXI INTO POSITION AND HOLD—*** Used by ATC to inform a pilot to taxi onto the departure runway in takeoff position and hold. It is not authorization for takeoff. It is used when takeoff clearance cannot immediately be issued because of traffic or other reasons. (See Hold, Cleared for Takeoff)

**TAXI PATTERNS—** Patterns established to illustrate the desired flow of ground traffic for the different runways or airport areas available for use.

**TERMINAL AREA—** A general term used to describe airspace in which approach control service or airport traffic control service is provided.

**TERMINAL AREA FACILITY—** A facility providing air traffic control service for arriving and departing IFR, VFR, Special VFR, and on occasion en route aircraft. (See Approach Control, Tower)

**TERMINAL CONTROL AREA—** (See Controlled Airspace)

**TERMINAL RADAR PROGRAM—** A national program instituted to extend the terminal radar services provided IFR aircraft to VFR aircraft. Pilot participation in the program is urged but is not mandatory. The program is divided into two parts and referred to as Stage II and Stage III. The Stage service provided at a particular location is contained in the Airport/Facility Directory.

1. Stage I originally comprised two basic radar services (traffic advisories and limited vectoring to VFR aircraft). These services are provided by all commissioned terminal radar facilities, but the term "Stage I" has been deleted from use.
2. Stage II/Radar Advisory and Sequencing for VFR Aircraft—Provides, in addition to the basic radar services, vectoring and sequencing on a full-time basis to arriving VFR aircraft. The purpose is to adjust the flow of arriving IFR and VFR aircraft into the traffic pattern in a safe and orderly manner and to provide traffic advisories to departing VFR aircraft.
3. Stage III/Radar Sequencing and Separation Service for VFR Aircraft—Provides, in addition to the basic radar services and Stage II, separation between all participating VFR aircraft. The purpose is to provide separation between all participating VFR aircraft and all IFR aircraft operating within the airspace defined as a Terminal Radar Service Area (TRSA) or Terminal Control Area (TCA). (See Controlled Airspace, Terminal Radar Service Area) (Refer to AIM, Airport/Facility Directory)

**TERMINAL RADAR SERVICE AREA/TRSA—** Airspace surrounding designated airports wherein ATC provides radar vectoring, sequencing, and separation on a full-time basis for all IFR and participating VFR aircraft. Service provided in a TRSA is called Stage III Service. The AIM contains an explanation of TRSA. TRSA's are depicted on VFR aeronautical charts. Pilot participation is urged but is not mandatory. (See Terminal Radar Program) (Refer to AIM, Airport/Facility Directory)

**TERRAIN FOLLOWING/TF—** The flight of a military aircraft maintaining a constant AGL altitude above the terrain or the highest obstruction. The altitude of the aircraft will constantly change with the varying terrain and/or obstruction.

**TETRAHEDRON—** A device normally located on uncontrolled airports and used as a landing direction indicator. The small end of a tetrahedron points in the direction of landing. At controlled airports, the tetrahedron, if installed, should be disregarded because tower instructions supersede the indicator. (See Segmented Circle) (Refer to AIM)

***THAT IS CORRECT—*** The understanding you have is right.

**THRESHOLD—** The beginning of that portion of the runway usable for landing. (See Airport Lighting, Displaced Threshold)

**THRESHOLD CROSSING HEIGHT/TCH—** The theoretical height above the runway threshold at which the aircraft's glideslope antenna would be if the aircraft maintains the trajectory established by the mean ILS glideslope or MLS glidepath. (See Glide Slope, Threshold)

**THRESHOLD LIGHTS—** (See Airport Lighting)

**TIME GROUP—** Four digits representing the hour and minutes from the 24-hour clock. Time groups without time zone indicators are understood to be UTC (Coordinated Universal Time); e.g., "0205." A time zone designator is used to indicate local time; e.g., "0205M." The end and beginning of the day are shown by "2400" and "0000," respectively.

**TORCHING—** The burning of fuel at the end of an exhaust pipe or stack of a reciprocating aircraft engine, the result of an excessive richness in the fuel air mixture.

*ICAO—TOTAL ESTIMATED ELAPSED TIME/TOTAL EET*—For IFR flights, the estimated time required from takeoff to arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or if no navigation aid is associated with the destination aerodrome, to arrive over the destination aerodrome. For VFR flights, the estimated time required from takeoff to arrive over the destination aerodrome (for use in international flight planning). (See Estimated Elapsed Time)

**TOUCH-AND-GO/TOUCH-AND-GO LANDING—** An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway.

**TOUCHDOWN—**

1. The point at which an aircraft first makes contact with the landing surface.
2. Concerning a precision radar approach (PAR), it is the point where the glide path intercepts the landing surface.

*ICAO—TOUCHDOWN—* The point where the nominal glide path intercepts the runway.

**TOUCHDOWN RVR—** (See Visibility)

**TOUCHDOWN ZONE—** The first 3,000 feet of the runway beginning at the threshold. The area is used for determination of Touchdown Zone Elevation in the development of straight-in landing minimums for instrument approaches.

**TOUCHDOWN ZONE ELEVATION/TDZE—** The highest elevation in the first 3,000 feet of the landing surface. TDZE is indicated on the instrument approach procedure chart when straight-in landing minimums are authorized. (See Touchdown Zone)

**TOUCHDOWN ZONE LIGHTING—** (See Airport Lighting)

**TOWER/AIRPORT TRAFFIC CONTROL TOWER—** A terminal facility that uses air/ground communications, visual signaling, and other devices to provide ATC services to aircraft operating in the vicinity of an airport or on the movement area. Authorizes aircraft to land or takeoff at the airport controlled by the tower or to transit the airport traffic area regardless of flight plan or weather conditions (IFR or VFR). A tower may also provide approach control services (radar or nonradar). (See Airport Traffic Area, Airport Traffic Control Service, Approach Control/Approach Control Facility, Approach Control Service, Movement Area, Tower En Route Control Service/Tower to Tower) (Refer to AIM)

*ICAO—AERODROME CONTROL TOWER—* A unit established to provide air traffc control service to aerodrome traffic.

**TOWER EN ROUTE CONTROL SERVICE/TOWER TO TOWER—** The control of IFR en route traffic within delegated airspace between two or more adjacent approach control facilities. This service is designed to expedite traffic and reduce control and pilot communication requirements.

**TPX-42—** A numeric beacon decoder equipment/system. It is designed to be added to terminal radar systems for beacon decoding. It provides rapid target identification, reinforcement of the primary radar target, and altitude information from Mode C. (See Automated Radar Terminal Systems, Transponder)

**TRACK—** The actual flight path of an aircraft over the surface of the earth. (See Course, Route, Flight Path)

*ICAO—TRACK—*The projection on the earth's surface of the path of an aircraft, the direction of which path at any point is usually expressed in degrees from north (true, magnetic, or grid).

**TRAFFIC—**

1. A term used by a controller to transfer radar identification of an aircraft to another controller for the purpose of coordinating separation action. Traffic is normally issued (a) in response to a handoff or point out, (b) in anticipation of a handoff or point out, or (c) in conjunction with a request for control of an aircraft.
2. A term used by ATC to refer to one or more aircraft.

**TRAFFIC ADVISORIES—** Advisories issued to alert pilots to other known or observed air traffic which may be in such proximity to the position or intended route of flight of their aircraft to warrant their attention. Such advisories may be based on:

1. Visual observation.
2. Observation of radar identified and nonidentified aircraft targets on an ATC radar display, or
3. Verbal reports from pilots or other facilities.

The word "traffic" followed by additional information, if known, is used to provide such advisories; e.g., "Traffic, 2 o'clock, one zero miles, southbound, eight thousand."

Traffic advisory service will be provided to the extent possible depending on higher priority duties of the controller or other limitations; e.g., radar limitations, volume of traffic, frequency congestion, or controller workload. Radar/nonradar traffic advisories do not relieve the pilot of his responsibility to see and avoid other aircraft. Pilots are cautioned that there are many times when the controller is not able to give traffic advisories concerning all traffic in the aircraft's proximity; in other words, when a pilot requests or is receiving traffic advisories, he should not assume that all traffic will be issued. (Refer to AIM, Radar Traffic Information Service)

***(Identification), TRAFFIC ALERT. ADVISE YOU TURN LEFT/RIGHT (specific heading if appropriate), AND/OR CLIMB/DESCEND (specific altitude if appropriate) IMMEDIATELY.*** (See Safety Alert)

**TRAFFIC INFORMATION—** (See Traffic Advisories)

***TRAFFIC IN SIGHT—*** Used by pilots to inform a controller that previously issued traffic is in sight. (See Negative Contact, Traffic Advisories)

***TRAFFIC NO LONGER A FACTOR—*** Indicates that the traffic described in a previously issued traffic advisory is no longer a factor.

**TRAFFIC PATTERN—** The traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from an airport. The components of a typical traffic pattern are upwind leg, crosswind leg, downwind leg, base leg, and final approach.

1. Upwind Leg—A flight path parallel to the landing runway in the direction of landing.

2. Crosswind Leg—A flight path at right angles to the landing runway off its upwind end.
3. Downwind Leg—A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg.
4. Base Leg—A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline.
5. Final Approach—A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. An aircraft making a straight-in approach VFR is also considered to be on final approach.

(See Straight-In Approach—VFR, Taxi Patterns) (Refer to AIM, FAR Part 91)

*ICAO—AERODROME TRAFFIC CIRCUIT—* The specified path to be flown by aircraft operating in the vicinity of an aerodrome.

**TRANSCRIBED WEATHER BROADCAST/TWEB—** A continuous recording of meteorological and aeronautical information that is broadcast on L/MF and VOR facilities for pilots. (Refer to AIM)

**TRANSFER OF CONTROL—** That action whereby the responsibility for the separation of an aircraft is transferred from one controller to another.

*ICAO—TRANSFER OF CONTROL—* Transfer of responsibility for providing air traffic control service.

**TRANSFERRING CONTROLLER/FACILITY—** A controller/facility transferring control of an aircraft to another controller/facility.

*ICAO—TRANSFERRING UNIT/CONTROLLER—* Air Traffic Control Unit/Air Traffic Controller in the process of transferring the responsibility for providing air traffic control service to an aircraft to the next air traffic control unit/air traffic controller along the route of flight.

**TRANSITION—**

1. The general term that describes the change from one phase of flight or flight condition to another; e.g., transition from en route flight to the approach or transition from instrument flight to visual flight.
2. A published procedure (SID Transition) used to connect the basic SID to one of several en route airways/jet routes, or a published procedure (STAR Transition) used to connect one of several en route airways/jet routes to the basic STAR. (Refer to SID/STAR Charts)

**TRANSITION AREA—** (See Controlled Airspace)

**TRANSMISSOMETER—** An apparatus used to determine visibility by measuring the transmission of light through the atmosphere. It is the measurement source for determining runway visual range (RVR) and runway visibility value (RVV). (See Visibility)

***TRANSMITTING IN THE BLIND/BLIND TRANSMISSION—*** A transmission from one station to other stations in circumstances where two-way communication cannot be established, but where it is believed that the called stations may be able to receive the transmission.

**TRANSPONDER—** The airborne radar beacon receiver/transmitter portion of the Air Traffic Control Radar Beacon System (ATCRBS) which automatically receives radio signals from interrogators on the ground, and selectively replies with a specific reply pulse or pulse group only to those interrogations being received on the mode to which it is set to respond. (See Interrogator) (Refer to AIM)

*ICAO—TRANSPONDER—*A receiver/transmitter which will generate a reply signal upon proper interrogation; the interrogation and reply being on different frequencies.

**TURBOJET AIRCRAFT—** An aircraft having a jet engine in which the energy of the jet operates a turbine which in turn operates the air compressor.

**TURBOPROP AIRCRAFT—** An aircraft having a jet engine in which the energy of the jet operates a turbine which drives the propeller.

**T-VOR/TERMINAL-VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION—** A very high frequency terminal omnirange station located on or near an airport and used as an approach aid. (See Navigational Aid, VOR)

**TWO WAY RADIO COMMUNICATIONS FAILURE—** (See Lost Communications)

**ULTRAHIGH FREQUENCY/UHF—** The frequency band between 300 and 3,000 MHz. The bank of radio frequencies used for military air/ground voice communications. In some instances this may go as low as 225 MHz and still be referred to as UHF.

**ULTRALIGHT VEHICLE—** An aeronautical vehicle operated for sport or recreational purposes which does not require FAA registration, an airworthiness certificate, nor pilot certification. They are primarily single occupant vehicles, although some two-place vehicles are authorized for training purposes. Operation of an ultralight vehicle in certain airspace requires authorization from ATC. (See FAR 103)

***UNABLE—*** Indicates inability to comply with a specific instruction, request, or clearance.

**UNCONTROLLED AIRSPACE—** Uncontrolled airspace is that portion of the airspace that has not been designated as continental control area, control area, control zone, terminal control area, or transition area and within which ATC has neither the authority nor the responsibility for exercising control over air traffic. (See Controlled Airspace)

**UNDER THE HOOD—** Indicates that the pilot is using a hood to restrict visibility outside the cockpit while simulating instrument flight. An appropriately rated pilot is required in the other control seat while this operation is being conducted. (Refer to FAR, Part 91)

**UNICOM—** A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOMs are shown on aeronautical charts and publications. (Refer to AIM, Airport/Facility Directory)

**UNPUBLISHED ROUTE—** A route for which no minimum altitude is published or charted for pilot use. It may include a direct route between NAVAIDS, a radial, a radar vector, or a final approach course beyond the segments of an instrument approach procedure. (See Published Route, Route)

**UPWIND LEG—** (See Traffic Pattern)

**URGENCY—** A condition of being concerned about safety, and of requiring timely but not immediate assistance; a potential Distress condition.

*ICAO—URGENCY—* A condition concerning the safety of an aircraft or other vehicle, or of person on board or in sight, but which does not require immediate assistance.

**VECTOR—** A heading issued to an aircraft to provide navigational guidance by radar.

*ICAO—RADAR VECTORING—* Provision of navigational guidance to aircraft in the form of specific headings, based on the use of radar.

***VERIFY—*** Request confirmation of information; e.g., "verify assigned altitude."

***VERIFY SPECIFIC DIRECTION OF TAKEOFF (OR TURNS AFTER TAKEOFF)—*** Used by ATC to ascertain an aircraft's direction of takeoff and/or direction of turn after takeoff. It is normally used for IFR departures from an airport not having a control tower. When direct communication with the pilot is not possible, the request and information may be relayed through an FSS, dispatcher, or by other means. (See IFR Takeoff Minimums and Departure Procedures)

**VERTICAL SEPARATION—** Separation established by assignment of different altitudes or flight levels. (See Separation)

*ICAO—VERTICAL SEPARATION—*Separation between aircraft expressed in units of vertical distance.

**VERTICAL TAKEOFF AND LANDING AIRCRAFT/VTOL AIRCRAFT—** Aircraft capable of vertical climbs and/or descents and of using very short runways or small areas for takeoff and landings. These aircraft include, but are not limited to, helicopters. (See Short Takeoff and Landing Aircraft)

**VERY HIGH FREQUENCY/VHF—** The frequency band between 30 and 300 MHz. Portions of this band, 108 to 118 MHz, are used for certain NAVAIDS; 118 to 136 MHz are used for civil air/ground voice communications. Other frequencies in this band are used for purposes not related to air traffic control.

**VERY LOW FREQUENCY/VLF—** The frequency band between 3 and 30 kHz.

**VFR AIRCRAFT/VFR FLIGHT—** An aircraft conducting flight in accordance with visual flight rules. (See Visual Flight Rules)

***VFR CONDITIONS—*** Weather conditions equal to or better than the minimum for flight under visual flight rules. The term may be used as an ATC clearance/instruction only when:

1. An IFR aircraft requests a climb/descent in VFR conditions.
2. The clearance will result in noise abatement benefits where part of the IFR departure route does not conform to an FAA approved noise abatement route or altitude.
3. A pilot has requested a practice instrument approach and is not on an IFR flight plan.

All pilots receiving this authorization must comply with the VFR visibility and distance from cloud criteria in FAR Part 91. Use of the term does not relieve controllers of their responsibility to separate aircraft in TCAs/TRSAs as required by FAA Handbook 7110.65. When used as an ATC clearance/instruction, the term may be abbreviated "VFR;" e.g., "MAINTAIN VFR," "CLIMB/DESCEND VFR," etc.

***VFR-ON-TOP—*** ATC authorization for an IFR aircraft to operate in VFR conditions at any appropriate VFR altitude (as specified in FAR and as restricted by ATC). A pilot receiving this authorization must comply with the VFR visibility, distance from cloud criteria, and the minimum IFR altitudes specified in FAR Part 91. The use of this term does not relieve controllers of their responsibility to separate aircraft in TCAs/TRSAs as required by FAA Handbook 7110.65.

**VFR MILITARY TRAINING ROUTES (VR)—** Routes used by the Department of Defense and associated Reserve and Air Guard units for the purpose of conducting low-altitude navigation and tactical training under VFR below 10,000 feet MSL at airspeeds in excess of 250 knots IAS.

***VFR NOT RECOMMENDED—*** An advisory provided by a flight service station to a pilot during a preflight or inflight weather briefing that flight under visual flight rules is not recommended. To be given when the current and/or forecasted weather conditions are at or below VFR minimums. It does not abrogate the pilot's authority to make his own decision.

**VIDEO MAP—** An electronically displayed map on the radar display that may depict data such as airports, heliports, runway centerline extensions, hospital emergency landing areas, NAVAIDS and fixes, reporting points, airway/route centerlines, boundaries, handoff points, special use tracks, obstructions, prominent geographic features, map alignment indicators, range accuracy marks, minimum vectoring altitudes.

**VISIBILITY—** The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night. Visbility is reported as statute miles, hundreds of feet or meters. (Refer to FAR Part 91, AIM)

1. Flight Visibility—The average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent unlighted objects may be

seen and identified by day and prominent lighted objects may be seen and identified by night.

*ICAO—Flight Visibility*—The visibility forward from the cockpit of an aircraft in flight.

2. Ground Visibility—Prevailing horizontal visibility near the earth's surface as reported by the United States National Weather Service or an accredited observer.

*ICAO—Ground Visibility*—The visibility at an aerodrome as reported by an accredited observer.

3. Prevailing Visibility—The greatest horizontal visibility equaled or exceeded throughout at least half the horizon circle which need not necessarily be continuous.
4. Runway Visibility Value/RVV—The visibility determined for a particular runway by a transmissometer. A meter provides a continuous indication of the visibility (reported in miles or fractions of miles) for the runway. RVV is used in lieu of prevailing visibility in determining minimums for a particular runway.
5. Runway Visual Range/RVR—An instrumentally derived value, based on standard calibrations, that represents the horizontal distance a pilot will see down the runway from the approach end. It is based on the sighting of either high intensity runway lights or on the visual contrast of other targets whichever yields the greater visual range. RVR, in contrast to prevailing or runway visibility, is based on what a pilot in a moving aircraft should see looking down the runway. RVR is horizontal visual range, not slant visual range. It is based on the measurement of a transmissometer made near the touchdown point of the instrument runway and is reported in hundreds of feet. RVR is used in lieu of RVV and/or prevailing visibility in determining minimums for a particular runway.
    - a. Touchdown RVR—The RVR visibility readout values obtained from RVR equipment serving the runway touchdown zone.
    - b. MID RVR—The RVR readout values obtained from RVR equipment located midfield of the runway.
    - c. Rollout RVR—The RVR readout values obtained from RVR equipment located nearest the rollout end of the runway.

*ICAO—Runway Visual Range*—The maximum distance in the direction of takeoff or landing at which the runway or the specified lights or markers delineating it can be seen from a position above a specified point on its centerline at a height corresponding to the average eye-level of pilots at touchdown.

**VISUAL APPROACH—** An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

*ICAO—VISUAL APPROACH*—An approach by an IFR flight when either part or all of an instrument approach procedure is not completed and the approach is executed in visual reference to terrain.

**VISUAL APPROACH SLOPE INDICATOR—** (See Airport Lighting)

**VISUAL DESCENT POINT/VDP—** A defined point on the final approach course of a nonprecision straight-in approach procedure from which normal descent from the MDA to the runway touchdown point may be commenced, provided the approach threshold of that runway, or approach lights, or other markings identifiable with the approach end of that runway are clearly visible to the pilot.

**VISUAL FLIGHT RULES/VFR—** Rules that govern the procedures for conducting flight under visual conditions. The term "VFR" is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan. (See Instrument Flight Rules, Instrument Meteorological Conditions, Visual Meteorological Conditions) (Refer to FAR, Part 91 and AIM)

**VISUAL HOLDING—** The holding of aircraft at selected, prominent geographical fixes which can be easily recognized from the air. (See Hold, Holding Fixes)

**VISUAL METEOROLOGICAL CONDITIONS/VMC—** Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling equal to or better than specified minima. (See Instrument Flight Rules, Instrument Meteorological Conditions, Visual Flight Rules)

**VISUAL SEPARATION—** A means employed by ATC to separate aircraft in terminal areas. There are two ways to effect this separation:

1. The tower controller sees the aircraft involved and issues instructions, as necessary, to ensure that the aircraft avoid each other.
2. A pilot sees the other aircraft involved and upon instructions from the controller provides his own separation by maneuvering his aircraft as necessary to avoid it. This may involve following another aircraft or keeping it in sight until it is no longer a factor. (See See and Avoid) (Refer to FAR, Part 91)

**VORTAC/VHF OMNIDIRECTIONAL RANGE/TACTICAL AIR NAVIGATION—** A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance measuring equipment (DME) at one site. (See Distance Measuring Equipment, Navigational Aid TACAN, VOR) (Refer to AIM)

**VORTICES/WING TIP VORTICES—** Circular patterns of air created by the movement of an airfoil through the air when generating lift. As an airfoil moves through the atmosphere in sustained flight, an area of area of low pressure is created above it. The air flowing from the high pressure area to the low pressure area around and about the tips of the airfoil tends to roll up into two rapidly rotating vortices, cylindrical in shape. These vortices are the most predominant parts of aircraft wake turbulence and their rotational force is dependent upon the wing loading, gross weight, and speed of the generating aircraft. The vortices from medium to heavy aircraft can be of extremely high velocity and hazardous to smaller aircraft. (See Aircraft Classes Wake Turbulence) (Refer to AIM)

**VOR/VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION—** A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the National Airspace System. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature. Voice features may be used by ATC or FSS for transmitting instructions/information to pilots. (See Navigational Aid) (Refer to AIM)

**VOT/VOR TEST SIGNAL—** A ground facility which emits a test signal to check VOR receiver accuracy. Some VOT's are available to the user while airborne, and others are limited to ground use only. (Refer to FAR, Part 91, AIM, Airport/Facility Directory)

**WAKE TURBULENCE—** Phenomena resulting from the passage of an aircraft through the atmosphere. The term includes vortices, thrust stream turbulence, jet blast, jet wash, propeller wash, and rotor wash both on the ground and in the air. (See Aircraft Classes, Jet Blast, Vortices) (Refer to AIM)

**WARNING AREA—** (See Special Use Airspace)

**WAYPOINT—** A predetermined geographical position used for route/instrument approach definition, or progress reporting purposes, that is defined relative to a VORTAC station or in terms of latitude/longitude coordinates.

**WEATHER ADVISORY/INFLIGHT WEATHER ADVISORY—** (See SIGMET, AIRMET)

**WEATHER ADVISORY/WS/WST/WA/CWA—** In aviation weather forecast practice, an expression of hazardous weather conditions not predicted in the area forecast, as they affect the operation of air traffic and as prepared by the NWS.

***WHEN ABLE—*** When used in conjunction with ATC instructions, gives the pilot the latitude to delay compliance until a condition or event has been reconciled. Unlike "pilot discretion," when instructions are prefaced "when able," the pilot is expected to seek the first opportunity to comply. Once a maneuver has been initiated, the pilot is expected to continue until the specifications of the instructions have been met. "When able," should not be used when expeditious compliance is required.

***WILCO—*** I have received your message, understand it, and will comply with it.

**WIND SHEAR—** A change in wind speed and/or wind direction in a short distance resulting in a tearing or shearing effect. It can exist in a horizontal or vertical direction and occasionally in both.

***WORDS TWICE—***

1. As a request: "Communication is difficult. Please say every phrase twice."
2. As information: "Since communications are difficult, every phrase in this message will be spoken twice."

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**CHANGE**

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

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**SUBJ:** FLIGHT SERVICES

1. PURPOSE: This change transmits revised pages for Order 7110.10H, Flight Services.

2. EFFECTIVE DATE: This change is effective December 18, 1986.

3. EXPLANATION OF CHANGES: Numerous editorial changes have been made throughout this handbook. The changes were made to correct errors resulting from the handbook reorganization, paragraph renumbering, FSS program changes, etc. Those changes that were included in the Change 1 Briefing Guide or issued by GENOT are marked by bold lines in the margin of the text. Editorial changes are not marked since they occur on nearly every page. A complete review of the handbook is recommended.

a. Teletype symbols are removed and examples revised to conform with Leased Service A/B Systems (LABS) procedures throughout this order.

b. Where time must be stated, using Universal Coordinated Time (UTC) the word "ZULU" is used instead of "Greenwich."

c. GENOT's through 6/66 are included.

d. 2-8. This new paragraph establishes procedures for delivery of the "Outlook" portion of WST's for broadcasts.

e. 3-4. Adds procedures for delivery of the "Outlook" portion of WST's in pilot briefings.

f. 4-14. This change specifies the procedures for issuing certain barometric pressure settings. (Action Notice A7110.2 effective 5/8/86)

g. Appendix A. PILOT/CONTROLLER GLOSSARY

(1) AIRMET/WA/Airmen's Meteorological Information. Adds CWA to the note. (ATO-364, J. Hunter)

(2) Area Navigation. Adds a definition for LORAN-C. (ATO-320.10, R. Vandel)

(3) Automated Radar Terminal Systems/ARTS. Clarifies the communications capabilities of ARTS II, and adds ARTS IIA. (ATO-320.11, L. McHugh)

(4) Center Weather Advisory/CWA. Adds a note and a reference. (ATO-364, J. Hunter)

**Distribution:** ZAT-712; ZAT-423 (External) **Initiated By:** ATO-300

D 4.308:

(5) Charted VFR Flyways. Adds a description of the VFR Flyways Planning Chart program. (ATO-259, W. Sellers)

(6) Convective SIGMENT/WST/Convective Significant Meteorological Information. Adds CWA to the note. (ATO-364, J. Hunter)

(7) Expect (Altitude) AT (Time) OR (Fix). Clarifies that the phraseology pertains to all clearances and not only to departures. (ATO-300)

(8) Hazardous Inflight Weather Advisory Service/HIWAS. Adds a description of the HIWAS program. (ATO-364, J. Hunter)

(9) Multicom. Adds a definition. (ATO-320, R. Matthews)

(10) Radar Weather Echo Intensity Levels. Defines the term "VIP levels." (ATO-368, H. Adams)

(11) SIGMET/CWA/Significant Meteorological Information. Adds CWA to the note. (ATO-364, J. Hunter)

(12) Time Group. Includes the term "Zulu" when referring to UTC. (ATO-330, L. Billow)

4. DISPOSITION OF TRANSMITTAL: Retain this transmittal until superseded by a new basic order.

5. PAGE CONTROL: Because of the extensive changes resulting from recoding and the inclusion of LABS procedures, Change 1 dated 12/18/86, replaces the Basic Order in its entirety. Retain only the covers, background, cross references and the forward page from the Basic 7110.10H.

John R. Ryan
Director, Air Traffic
Operations Service

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# Chapter 1. INTRODUCTION

## Section 1. GENERAL

### 1-1. PURPOSE

This handbook prescribes procedures and phraseology for use by personnel providing flight assistance services.

### 1-2. DISTRIBUTION

This Order is distributed to selected offices in Washington Headquarters, Regional Offices, FAA Technical Center, and Aeronautical Center. Copies to all Air Traffic Facilities; all International Aviation Field Offices; General Aviation, Air Carrier and Flight Standards District Offices; and interested aviation public.

### 1-3. CANCELLATIONS

Flight Services Handbook 7110.10G and changes thereto are cancelled.

### 1-4. EXPLANATION OF CHANGES

Significant changes to the basic handbook are listed below. This edition includes Service B GENOTs through 6-28.

**a.** 4-72 provides strip marking guidance to comply with the change in paragraph 6-2.

**b.** 4-74 deletes the symbol "B" for *base leg* to coincide with the symbology in Handbook 7110.65.

**c.** 6-2 allows specialists to comply with pilot's request to activate a flight plan regardless of the actual time of departure.

### 1-5. EFFECTIVE DATE

**a.** This handbook is effective May 8, 1986.

**b.** Changes are scheduled every 112 days.

Change 1—December 18,1986
Change 2—April 9, 1987
Change 3—July 30,1987
Change 4—November 19,1987
Change 5—March 10,1988

**c.** If Handbooks or Changes are not received at least 30 days prior to effective dates, facilities shall notify the Airspace, Rules and Aeronautical Information Division (ATO-200) through the regional distribution officer.

### 1-6. thru 1-19. RESERVED

## Section 2. TERMS OF REFERENCE

### 1-20. WORD MEANINGS

As used in this manual, the following have the meaning shown:

**a.** "Shall," or an action verb in the imperative sense, means a procedure is mandatory.

**b.** "Should," means a procedure is recommended.

**c.** "May" or "need not," means a procedure is optional.

**d.** "Will," means futurity, not a requirement for application of a procedure.

**e.** Singular words include the plural.

**f.** Plural words include the singular.

**g.** "Aircraft" means the airframe, crew members, or both.

**h.** "Altitude," means altitude mean sea level, flight levels or both.

**i.** "Miles" means nautical miles unless otherwise specified, and means statute miles in conjunction with visibility.

**j.** "Time" when used in the context of a clock reading is the hour in Coordinated Universal Time (UTC) or the local equivalent as appropriate, and the minutes. Change to the next minute is made at the minute plus 30-second point, except for time checks or when closing a scheduled weather broadcast which are given to the nearest quarter minute. The term "Zulu" shall be used when procedures require a a reference to UTC in radio communications.

**k.** LABS means the Leased Service A/B System, the primary method of exchanging flight movement, meteorological, NOTAM, and administrative data between Air Traffic facilities.

### 1-21. NOTES

Statements of fact, of a prefatory or explanatory nature and relating to the use of directive material, have been identified and worded as "Notes."

### 1-22. 7110.10H CHANGES

When revised, reprinted, or additional pages are issued, they will be marked as follows:

**a.** Each revised or additional page will show the change number and effective date of the change.

**b.** Bold lines in the margin of the text will mark the location of substantive procedural, operational or policy changes; i.e., when material which affects the performance of duty is added, revised or deleted.

**c.** The legend "Editorial Changes" at the bottom of the page will indicate that revisions have been made which do not change the intent of the text or affect performance of duty. This may include changes in wording, numbering of paragraphs or pages, and page make-up. When both editorial and substantive changes occur on a page, this legend will not appear.

**d.** A reprinted page not requiring change as noted in **b.** or **c.** will be reproduced in its original format with no change to date or change number.

### 1-23. ABBREVIATIONS

Abbreviations authorized for use in the application of the procedures in this handbook are those contained in Order 7340.1, Contractions handbook.

### 1-24. thru 1-29. RESERVED

## Section 3. RESPONSIBILITY

### 1-30. SCOPE

Air Traffic personnel assigned to facilities providing flight service functions shall be familiar with the provisions of this handbook which pertain to their operational responsibilities.

### 1-31. PROCEDURAL APPLICATIONS

Apply the procedures in this handbook except when other procedures are contained in a Letter of Agreement, or other appropriate FAA document, provided they only supplement this handbook and any standards they specify are not less than those in this handbook.

**Note 1.** — Pilots are required to abide by applicable provisions of FAR or any other pertinent regulations, regardless of the application of any procedure in this handbook.

**Note 2.** — The Facility Operation and Administration Handbook contains administrative instructions pertaining to these letters and documents. Persons or agencies interested in negotiating these letters or documents can do so by contacting the appropriate Flight Service Station.

**Note 3.** — Flight Service Station personnel should submit recommended changes directly to their nearest regional FSSCOM member.

**Note 4.** — Procedures for Scheduled Weather Broadcast (SWB) apply only in Alaska.

### 1-32. DUTY PRIORITY

**a.** Because there are many variables involved, it is impossible to provide a standard list of duty priorities that apply to every situation. Each set of circumstances must be evaluated on its own merit and, when more than one action is required, personnel shall exercise their best judgment based on the facts and circumstances known to them. Action which appears most critical from a safety standpoint should be performed first.

**b.** Emergency situations are those where life or property is in immediate danger. Inflight services are those provided to or affecting aircraft in flight or otherwise operating on the airport surface. This includes services to airborne aircraft such as NAVAID monitoring and restoration, AAS, delivery of ATC clearances, advisories or requests, issuance of military flight advisory messages, EFAS, NOTAM's, SAR communications searches, transcribed or live broadcasts, weather observations, PIREP's and radio pilot briefings. Preflight services are those which directly affect aircraft operations but which are provided prior to actual departure and usually by telephone. This includes pilot briefings, flight plan filing/processing, and aircraft operational reservations.

**c.** During peak activity periods, duties may conflict occasionally. When this occurs, personnel shall use good judgment based on the requirements of the situation at hand and, in general, be guided by the following order of duty priorities:

(1) Emergency Situations

(2) Inflight Services

(3) Preflight Services

### 1-33. DUTY FAMILIARIZATION AND TRANSFER OF POSITION RESPONSIBILITY

The transfer of position responsibility shall be accomplished in accordance with the Standard Operating Practice (SOP) for the Transfer of Position Responsibility and appropriate facility directives each time the operational responsibility for a position is transferred from one specialist to another.

**a. PURPOSE.**

This paragraph prescribes the method and step-by-step process for conducting a position relief briefing and transferring position responsibility from one specialist to another.

**b. DISCUSSION.**

In all operational facilities, the increase in traffic density and the need for the expeditious movement of air traffic without compromising safety have emphasized the importance of the position relief process. The contents, methods, and practices used for position relief and briefing vary among personnel and pertinent information is often forgotten or incompletely covered. Major problems occur whenever there is a heavy reliance upon memory unsupported by routines or systematic reminders. This SOP addresses the complete task of transferring position responsibility and the associated relief briefing.

Position relief unavoidably provides workload for specialists at the time of relief. The intent of this SOP is to make the transfer of position responsibility take place smoothly and to ensure a complete transfer of information with a minimum amount of workload. The method takes advantage of a self-briefing concept in which the relieving specialist obtains needed status information by reading from the Status Information Area(s) to begin the relief process. Up to the minute information relating to the provision of flight services to pilots and aircraft in-flight requires verbal exchanges between specialists during the relief process. The method also specifies the point when the transfer of position responsibility occurs.

In the final part of the relief process, the specialist being relieved monitors and reviews the position to ensure that nothing has been overlooked or incorrectly displayed and that the transfer of position responsibility occurred with a complete briefing.

**c. TERMS.**

The following terms are important for a complete understanding of this SOP:

—*Status Information Area(s).* Manual or automatic displays of the current status of position related equipment and operational conditions or procedures.

—*Written Notes.* Manual recorded items of information kept at designated locations on the position of operation. They are an element of Status Information Areas.

—*Checklist.* An ordered listing of items to be covered in a position relief.

**d. PRECAUTIONS.**

(1) Specialists involved in the position relief process should not rush or be influenced to rush.

(2) During position operation, each item of status information which is or may be an operational factor for the relieving specialist should be recorded as soon as it is operationally feasible so that it will not be forgotten or incorrectly recorded.

(3) Extra care should be taken when more than one specialist relieves or is being relieved from a position at the same time (e.g., combining or decombining positions).

**e. RESPONSIBILITIES.**

(1) The specialist being relieved shall be responsible for ensuring that any pertinent status information of which he/she is aware is relayed to the relieving specialist and is either:

(a) Accurately displayed in the Status Information Area(s) for which he/she has responsibility, or

(b) Relayed to the position having responsibility for accurately displaying the status information. The relieving specialist shall be responsible for ensuring that, prior to accepting responsibility for the position, any unresolved questions pertaining to the operation of the position are resolved. The relieving specialist and the specialist being relieved shall share equal responsibility for the completeness and accuracy of the position relief briefing. The specialists engaged in a position relief shall conduct the relief process at the position being relieved unless other procedures have been established and authorized by the facility Air Traffic Manager.

**f. STEP BY STEP PROCESS.**

(1) PREVIEW THE POSITION

*Relieving Specialist*

(a) Follow checklist and review the Status Information Area(s). (Note. — This sub-step may be replaced by an authorized pre-position briefing provided an equivalent review of checklist items is accomplished.)

(b) Observe position equipment, operational situation, and the work environment.

(c) Listen to voice communications and observe other operational actions.

(d) Observe current and pending aircraft and vehicular traffic and correlate with flight and other movement information.

(e) Indicate to the specialist being relieved that the position has been previewed and that the verbal briefing may begin.

**1-33f1. Note.—** Sub-steps b, c, and d may be conducted concurrently or in order.

(2) VERBAL BRIEFING

*Specialist Being Relieved*

(a) Brief the relieving specialist on the abnormal status of items not listed on the Status Information Area(s) as well as on any items of special operational interest calling for verbal explanation or additional discussion.

(b) Brief on TRAFFIC, if applicable.

*Relieving Specialist*

(c) Ask questions necessary to ensure a complete understanding of the operations situation.

*Specialist Being Relieved*

(d) Completely answer any questions asked.

(3) ASSUMPTION OF POSITION RESPONSIBILITY

*Relieving Specialist*

(a) Make a statement or otherwise indicate to the specialist being relieved that position responsibility has been assumed.

*Specialist Being Relieved*

(b) Release the position to the relieving specialist.

(4) REVIEW THE POSITION

*Relieving Specialist*

(a) Sign on the position unless a facility directive authorized sub-step h below.

(b) Check, verify, and update the information obtained in steps (1) and (2).

(c) Check position equipment in accordance with existing directives.

*Specialist Being Relieved*

(d) Review checklist, Status Information Area(s), written notes, and other prescribed sources of information and advise the relieving specialist of known omissions, updates, or inaccuracies.

(e) Observe overall position operation to determine if assistance is needed.

(f) If assistance is needed, provide or summon it as appropriate.

(g) Advise the appropriate position regarding known Status Information Area(s) omissions, update, or inaccuracies.

(h) Sign the relieving specialist on the position if appropriate.

(i) Sign off the position in accordance with existing directives or otherwise indicate that the relief process is complete.

**1-33. Reference—** FAA Handbook 7210.3, paragraphs 222, 223, and 224.

# Chapter 2. BROADCAST PROCEDURES

## Section 1. GENERAL

### 2-1. TYPES OF BROADCASTS

Weather and flight information shall be broadcast by one or more of the following broadcast categories:

**a.** Unscheduled broadcasts.

**b.** Weather advisory (WST, WS, WA, CWA, AWW,) broadcast.

**c.** Transcribed weather broadcast (TWEB).

**d.** Pilots Automatic Telephone Weather Answering Service (PATWAS).

**e.** Scheduled weather broadcast (SWB) —Alaska.

**f.** Hazardous Inflight Weather Advisory Service (HIWAS).

### 2-2. SPEECH RATE

Surface weather reports shall be spoken at a rate of 100 words-per-minute. All other data shall be spoken at a rate of 120 words-per-minute.

### 2-3. INTERRUPTION OF BROADCAST

Interrupt broadcast only when you believe that an aircraft requires immediate attention; e.g., to issue an airport advisory. When an aircraft calls during a broadcast:

**a.** Broadcast for a short interval on the frequency to which the pilot is listening simultaneously with the broadcast frequencies, and complete the aircraft contact immediately after the broadcast.

**b.** If the pilot repeats the call, interrupt the broadcast and answer the call.

### 2-4. BROADCAST NOTAM's

Broadcast all NOTAM (D) containing information not carried in the Notices to Airmen (Class II) Publication. Broadcast NOTAM (L) for the local station only.

**Note. —** Landing area information for those airports served by a control tower during the hours the tower is in operation shall not be included in the scheduled or unscheduled broadcasts of the tie-in FSS.

### 2-5. ANNOUNCING MISSING ITEMS

Announce the word "missing" when the letter "M" (or two dashes in a report from an automatic weather reporting station) appears in place of any items or component of a weather report, or in place of unreadable or obviously incorrect items or portions of weather reports. When appropriate, instead of speaking the name of several locations with missing reports, announce: "other scheduled reports missing."

### 2-6. WEATHER REPORT PHRASEOLOGY

The weather report entered in the hourly sequence collection is current until superseded by a special or local observation, or the next hourly report.

**a.** Announce the location of the observation as follows:

(1) The geographical location name (not the identifier), twice for SWB, once for other broadcasts.

**Examples —**

"FRONT ROYAL, FRONT ROYAL" (SWB)

"FRONT ROYAL" (other Broadcasts)

(2) When the location name is duplicated within 500 miles, follow the location name with the state name.

**Examples —**

"COLUMBUS, COLUMBUS, OHIO" (SWB)

(3) When weather reports originate at more than one airport at the same geographical location, identify the airport.

**Examples —**

"CHICAGO, CHICAGO O'HARE"

"CHICAGO, CHICAGO MIDWAY" (SWB)

"CHICAGO O'HARE"

"CHICAGO MIDWAY" (other Broadcasts)

(4) Where it is considered necessary and a request is received from the military base commander to broadcast the weather reports originating at the base and the controlling military agency.

**Example. —**

"CAIRNS, CAIRNS ARMY AIR FIELD"

“ANDREWS, ANDREWS AIR FORCE BASE” (SWB)

**b.** State the height and character of sky coverage data as follows:

(1) In the same order of ascending height in which they appear in the weather report.

(2) Do not say the word “clouds.”

(3) Announce ceiling designators as follows:

| Designator | Say |
|---|---|
| M | MEASURED CEILING |
| E | ESTIMATED CEILING |
| W | INDEFINITE CEILING |

(4) State heights in hundreds and/or thousands of feet.

**Examples. —**

| | |
|---|---|
| 3 | THREE HUNDRED |
| 18 | ONE THOUSAND EIGHT HUNDRED |
| 200 | TWO ZERO THOUSAND |

(5) Announce cloud contractions as follows:

| Symbol | Say |
|---|---|
| CLR | CLEAR |
| SCT | SCATTERED |
| BKN | BROKEN |
| OVC | OVERCAST |

(6) When a dash precedes a cloud contraction, say the word “thin.”

**Example. —**

| Symbol | Say |
|---|---|
| 7-BKN | SEVEN HUNDRED THIN BROKEN |

(7) In reports obtained from an AMOS station when the sky conditions are reported in the group added by observer, broadcast it in the usual order for standard manual observations. When the sky condition is not reported, announce “sky condition missing.”

(8) Announce a ceiling height indicated by the figure “0” as “zero.”

(9) Announce a condition indicated by “X” or “-X” as:

| Symbol | Say |
|---|---|
| X | SKY OBSCURED |
| -X | SKY PARTIALLY OBSCURED |

(10) Announce sky and ceiling conditions (not all possible combinations of phenomena are included) in accordance with the following:

**Examples. —**

| Contractions | Say |
|---|---|
| -X M10 BKN 50 BKN | “Sky partially obscured, measured ceiling one thousand broken, five thousand broken.” |
| 20 SCT E30 BKN 250 BKN | “Two thousand scattered, estimated ceiling three thousand broken, two five thousand broken.” |
| M10 BKN 50 BKN 300 OVC | “Measured ceiling one thousand broken, five thousand broken, three zero thousand overcast.” |
| 10 SCT 50 SCT 200 SCT | “One thousand scattered, five thousand scattered, two zero thousand scattered.” |
| W6X | Indefinite ceiling six hundred, sky obscured.” |
| -X M5 OVC | “Sky partially obscured, measured ceiling five hundred overcast.” |
| 5 -BKN | “Five hundred thin broken.” |
| -X 10 -BKN 50 -OVC | “Sky partially obscured, one thousand thin broken, five thousand thin overcast.” |
| 10 -SCT E20 BKN | “One thousand thin scattered, estimated ceiling two thousand broken.” |
| 20 SCT E250 OVC | “Two thousand scattered, estimated ceiling two five thousand overcast.” |
| M10V BKN | “Measured one thousand variable broken.” |

**c.** Announce visibility as follows:

**Note. —**When visibility is less than 3 miles and variable, this information is reported in remarks.

| Reading | Say |
|---|---|
| 1/16 | VISIBILITY ONE SIXTEENTH |
| 1/8 | VISIBILITY ONE EIGHTH |
| 3/4 | VISIBILITY THREE QUARTERS |
| 11/2V | VISIBILITY ONE AND ONE-HALF VARIABLE |
| 6 | VISIBILITY SIX |
| 15 | VISIBILITY ONE FIVE |

**d.** Announce atmospheric phenomena and obstructions to vision appearing in a weather report. Convert the symbols as follows:

| Symbols | Say |
|---|---|
| + | HEAVY |
| - | LIGHT |
| T | THUNDERSTORM |
| R | RAIN |
| RW | RAIN SHOWERS |
| ZR | FREEZING RAIN |
| L | DRIZZLE |
| ZL | FREEZING DRIZZLE |
| T+ | SEVERE THUNDERSTORMS |
| S | SNOW |
| SP | SNOW PELLETS |
| SG | SNOW GRAINS |
| IC | ICE CRYSTALS |
| A | HAIL |
| IP | ICE PELLETS |
| F | FOG |
| GF | GROUND FOG |
| IF | ICE FOG |
| BD | BLOWING DUST |
| BN | BLOWING SAND |
| BS | BLOWING SNOW |
| BY | BLOWING SPRAY |
| H | HAZE |
| K | SMOKE |
| D | DUST |

**Note.** —Absence of any intensity symbol indicates condition to be moderate.

**e.** Announce temperature and dew point in accordance with the following:

(1) In degrees Fahrenheit.

(2) Below zero Fahrenheit values by prefixing the temperature with the word "minus."

**Example.** —

| Reading | Say |
|---|---|
| 37/36 | TEMPERATURE THREE SEVEN, DEW POINT THREE SIX |
| 104/99 | TEMPERATURE ONE ZERO FOUR, DEW POINT NINER NINER |
| 2/-3 | TEMPERATURE TWO, DEW POINT MINUS THREE |

**f.** Announce wind direction and speed as follows:

(1) State the word "wind" followed by separate digits of the indicated wind direction to the nearest 10-degree multiple, and the separate digits of the indicated velocity in knots.

**Example.** —

"WIND, THREE SIX ZERO AT FOUR ZERO."

(2) Omit the words "magnetic," "true," or "knots."

(3) Announce a north wind as "three six zero," rather than "zero zero zero."

(4) Read other than local wind direction as it appears in the report; i.e., "true" rather than "magnetic."

(5) If any element of the wind is estimated, state the words "wind estimated" prior to the direction.

**Example.** —

"WIND, ESTIMATED ZERO THREE ZERO AT ONE FOUR, PEAK GUSTS TWO FIVE."

(6) Whenever the speed of gusts or squalls is reported announce this immediately following the average wind value.

**Example.** —

"WIND, TWO THREE ZERO AT TWO FIVE, PEAK GUSTS THREE FIVE."

"WIND ONE EIGHT ZERO AT FOUR FIVE, PEAK GUSTS IN SQUALLS, FIVE FIVE."

**g.** Announce each of the 4 digits of the altimeter setting.

**h.** Announce remarks and NOTAM's included in weather reports. Do not include additive data intended primarily for the preparation of forecast maps. Announce as follows:

REMARKS

| | |
|---|---|
| VSBY 1V2 | "Visibility variable between one and two." |
| VSBY NE3 SE2 1/2 SW2 | "Visibility northeast three, southeast two and one-half, southwest two." |
| RO4VV 1/4V1 | "Runway four visibility variable between one quarter and one." |
| R36VV1 1/2+ | "Runway three six visibility more than one and one-half." |
| RVVNO | "R—V—V not available." |
| R18VR40 | "Runway one eight R—V—R four thousand" |
| R16VR10 — | "Runway one six R—V—R less than one thousand" |
| RVRNO | "R—V—R not available" |
| PIREP VSBY ALF (value as stated by pilot) TOP 60 | "Pilot reports visibility aloft (value as stated by pilot) top six thousand" |
| PIREP K LYR 8/10 VSBY (value as stated by pilot) | "Pilot reports smoke layer 8 hundred to one thousand feet. Visibility (value as stated by pilot)" |

**Note.** —In broadcasting AMOS reports, if the visibility is three miles or more, the tenths are not reported. A missing visibility value is shown by two dashes(- -).

—CONTINUED

| | |
|---|---|
| PTCHS GF W N E TWR VSBY 5 GF DEP 30 | "Patches of ground fog west, north, and east" "Tower visibility five, ground fog three zero feet deep" |
| VSBY1V2 | "Visibility variable between one and two" |
| VSBY NE3 SE2 1/2 SW2 | "Visibility northeast three, southeast two and one-half, southwest two" |
| 220 BKN 280/FEW ACSL OVR RDG SW/RE47 | "Broken clouds at two two thousand, tops at two eight thousand. Few standing lenticular altocumulus over ridge southwest" (RE47 not spoken) |
| T OVHD MOVG E B28 FQT LTGCG | "Thunderstorm overhead moving east. (Time begun—H+28—not spoken). Frequent lightning cloud to ground." |
| SCT V BKN | "Scattered layer variable broken" |
| TCU NW | "Towering cumulus northwest" |
| K10 | "Smoke layer one thousand" |
| F6 | "Fog obscuring six-tenths of sky" |

—CONTINUED

| | |
|---|---|
| RWU E | "Rain showers of unknown intensity east" |
| SNOINCR5 | "Snow increased five inches during past hour" |
| S-OCNLY S+ | "Light snow, occasionally heavy" |

## 2-7. OBSOLETE DATA

Do not broadcast obsolete data.

## 2-8. WST "OUTLOOK"

Do not broadcast the "OUTLOOK" section of WST's on communications frequencies or NAVAID's. Data contained in the "OUTLOOK" concerning convective activity location, movement, and intensity may be extracted for compilation of the forecast summary portion of the PATWAS.

## 2-9. RESERVED

# Section 2. UNSCHEDULED BROADCASTS

## 2-10. GENERAL

**a.** Unscheduled broadcasts are those which are necessary due to receipt of special weather reports, PIREP's, NOTAM's, weather advisories, radar reports, military training route information, ALNOTs, and other information considered necessary to enhance safety and efficiency of flight.

**b.** Broadcast these items in accordance with paragraph 2-11 and 2-12 and as follows:

(1) Broadcast SP's/RS's, PIREP's and NOTAM's for locations determined by the criteria in Section 6, paragraph 2-51, Surface Reports.

(2) Broadcast PIREP's in accordance with paragraph 9-20a.(1).

## 2-11. PRE-BROADCAST ACTION

Broadcast a WST, WS, WA, CWA, or AWW pertaining to an area within 150 NM of the FSS or a broadcast facility controlled by your station. Upon receipt, record the time of receipt, then relay pertinent AIRMET information to the appropriate ATC towers for which you have message delivery responsibility. Adverse conditions may be consolidated into one report when conditions are similar and areas are adjacent.

## 2-12. PHRASEOLOGY AND BROADCAST TIME

Make unscheduled broadcasts as soon as practicable following receipt of the data. If the broadcast cannot be completed at least 3 minutes before H+00, H+15, H+30, or H+45, broadcast the data at these times.

**a.** Special Weather Report — Upon receipt.

*Phraseology:*

AVIATION BROADCAST—Special Weather Report (location name twice) (last two digits of observation time) (weather report).

**b.** AWW and WST—upon receipt and at 15 minute intervals at H+00, H+15, H+30, and H+45.

*Phraseology:*

AVIATION BROADCAST, WEATHER ADVISORY, CONVECTIVE SIGMET (IDENT) (TEXT)

**c.** CWA, WS and WA— Upon receipt and at 30 minute intervals at H+15 and H+45 for the first hour after issuance.

*Phraseology:*

AVIATION BROADCAST, WEATHER ADVISORY, (WSFO or ARTCC IDENT) CENTER WEATHER ADVISORY/SIGMET/AIRMET (IDENT) (TEXT).

**d.** Thereafter announce an advisory alert at H+15 and H+45 for the valid period of the advisories. The alert announcement shall consist of advisory identification and a very brief statement of the weather and areas affected.

*Phraseology:*

AVIATION BROADCAST, WEATHER ADVISORY, A (SIGMET) (AIRMET), (CENTER WEATHER ADVISORY), (ETC) IS CURRENT FOR (CONDITIONS).

**Note.** —Although brief, the alert announcement should contain enough information to alert pilots to significant weather conditions occurring or forecast along their route.

**e.** ALNOT— Stations within the ALNOT search area shall broadcast the ALNOT as follows:

(1) Immediately after receipt.

(2) Transmit at H +15 for two hours following receipt. If the ALNOT is received during night hours, repeat the announcement at H +15 for 2 hours following sunrise.

(3) **Alaska**—Following opening announcement in the scheduled broadcast, request pilots to standby for the ALNOT.

**Example.** —

"AVIATION BROADCAST, ALERT NOTICE, ATTENTION ALL PILOTS, STAND BY FOR AN ANNOUNCEMENT OF OVERDUE AIRCRAFT AT CONCLUSION OF THIS BROADCAST."

**f.** NOTAM's— NOTAM's meeting the broadcast criteria in paragraph 2-10 shall be broadcast immediately upon receipt, except as outlined below.

(1) Maintenance Shutdown Notice—Broadcast a Notice to Airmen immediately preceding a maintenance shutdown and another when service is restored. Make this broadcast on all en route navigational aids controlled by a facility (except those listed under paragraph 2-52), 122.2 MHz, and any other frequency deemed advisable.

(2) Important Changes to NAVAID's—Broadcast, at H+15 for 12 hours before and 12 hours after, any of the following changes in any NAVAID for which your station has Notice to Airmen responsibility.

(a) Change in frequency or identification.

(b) Relocation or decommissioning of a NAVAID. If the change has not been published in the Notices to Airmen (Class II) Publication for at least seven days preceding the change, continue the broadcast through the seventh day following publication.

(3) HIBAL Activity Notice—Stations that issue NOTAM (L) concerning unmanned free balloon (HIBAL) prelaunch notices shall broadcast this information 15 minutes before the balloon is released. When you are informed that the balloon has been launched, delayed, cancelled or has begun descent, broadcast this information immediately. Additionally, broadcast any balloon position reports or balloon PIREP's received.

(4) RAOB Release—At the ¼ hour before a RAOB balloon is released, broadcast a notice of its impending release and ascension rate.

(5) NAVAID's—Use plain language and phraseology that will convey the information clearly. Announce NAVAID's as follows:

| | |
|---|---|
| H,HH,HHH | Radio beacon |
| COMLO | Compass Locator |
| VOR | V-O-R |
| VORTAC | VOR (as in "vortex") — TAC (k) |
| TACAN | TAC(k) AN |
| DME | D-M-E |
| ILS | I-L-S |

**Examples. —**

"Cheyenne, Cheyenne V-O-R out of service."

"Chicago, Chicago VORTAC resumed operation."

**g.** RAREP's— Procedures for handling radar weather data vary according to the location of the individual FSS in relation to the NWS facility, as follows:

(1) FSS's not having access to local RAREP's, broadcast upon receipt those Service A SP RAREP's which are less than 1 hour old and are of significance to their flight service area.

(2) FSS's that receive local RAREP's:

(a) Broadcast SP RAREP's upon receipt.

(b) Broadcast routine RAREP's upon receipt and at H+00, H+15, H+30 and H+45.

(3) FSS's providing radar weather advisory service (i.e., equipped with a repeater scope):

(a) Summarize observed data in each unscheduled broadcast.

(b) Refer to the local NWS RAREP's to determine the intensity, tops, etc., of observed echoes.

Do not broadcast those portions of RAREP's containing information on the location of a hurricane eye. These reports begin with the identifying words "eye" or "center."

Following is an example of a RAREP as it appears and as it is broadcast:

**Example. —**

ICT 0135 LN8TRW+/+311/50 190/10 20W 2325 CELLS 1828 MT 350 AT 270/20 HJ231 II3332 JH23333 KJ23346 LI11123

"WICHITA, WICHITA, RADAR REPORT. THREE FIVE OBSERVATION. A LINE WITH EIGHT TENTH COVERAGE OF THUNDERSTORMS WITH HEAVY RAIN SHOWERS INCREASING IN INTENSITY EXTENDING FROM FIVE ZERO MILES NORTHWEST TO ONE ZERO MILES SOUTH OF WICHITA. TWO ZERO MILES WIDE. LINE MOVING NORTHEAST AT TWO FIVE KNOTS. CELLS MOVING NORTH AT TWO EIGHT KNOTS. MAX TOP THREE FIVE THOUSAND TWO ZERO MILES WEST OF WICHITA."

**Note.** —The groups of figures at the end of radar reports are the digital radar codes which may be plotted using an overlay. These letters and numbers are not broadcast.

**h.** Military Training Activity— Broadcast at H +15 hourly and include on the PATWAS and TWEB (VOR and L/MF) a statement for MTR and MOA activity within 100NM of your facility, at least 30 minutes prior to the start of and until the activity is concluded.

*Phraseology:*

AVIATION BROADCAST, MILITARY TRAINING ACTIVITY ADVISORY—HIGH-SPEED MILITARY OPERATION(S) BEING CONDUCTED BELOW 10,000 FEET WITHIN 100NM OF (name) FSS. CONTACT (name) FSS FOR DETAILS ON THIS ACTIVITY.

## 2-13. OUTLETS

Make the unscheduled broadcast on all en route NAVAID's controlled by your facility, except VOR or TVOR used for ATIS or TWEB.

## 2-14. thru 2-19. RESERVED

## Section 3. TRANSCRIBED WEATHER BROADCASTS (TWEB)

### 2-20. GENERAL

**a.** This transcribed broadcast service provides continuous aeronautical and meteorological information on L/MF and VOR facilities as follows:

**b.** At TWEB equipment (FAA 5210) locations controlling two or more VORs, the one used least for ground-to-air communications, preferably the nearest VOR, may be used as a TWEB outlet simultaneously with the H-SAB or SABH facility. Where this is accomplished, capability to manually override the broadcast shall be provided for emergency communications.

### 2-21. CONTENT

The sequence, source, and content of transcribed broadcast material shall be:

**a.** Introduction.

*Phraseology:*

"TRANSCRIBED AVIATION WEATHER BROADCAST."

**b.** Synopsis—Prepared by selected WSFO's and stored in WMSC.

**c.** Adverse conditions. Extracted from FA Flight Precautions, WST, WS, WA, CWA, AWW.

*Phraseology:*

"FLIGHT PRECAUTIONS (text)."

**d.** TWEB Route Forecasts. Include valid time of forecasts prepared by WSFO's and stored in WMSC.

**e.** Winds aloft forecast. Broadcast the Service A winds aloft forecast for the location nearest to the TWEB. The broadcast should include the levels from 3,000 to 12,000 feet, but shall always include at least two forecast levels above the surface.

**f.** RADAR reports—furnished by the WSFO or in accordance with the procedures specified in Para. **2-12g**.

**g.** Surface weather reports. Record items of the weather reports as outlined in **para. 2-54c(2)** from not more than 20 reports. Up to 25 reports are authorized for HH TWEB outlets serving overseas routes.

(1) Broadcast local reports first, then the remainder of the reports, beginning with the first station east of true north and continuing clockwise around the TWEB location.

(2) Announce the location name of a surface report once.

*Phraseology:*

Surface weather broadcast introduction: "AVIATION WEATHER, (time) ZULU OBSERVATIONS UNLESS OTHERWISE STATED." Special weather reports: "(location name) SPECIAL REPORT (time of observation), (weather report)."

**h.** Pilot reports. Summarize PIREPs. If the weather conditions meet PIREP soliciting requirements within the area covered by the broadcast, append a request for PIREP's.

*Phraseology:*

"PILOT WEATHER REPORTS REQUESTED (location,area) FOR (cloud tops, icing, turbulence etc.), CONTACT FLIGHT WATCH OR THE NEAREST FLIGHT SERVICE STATION".

**i.** Notices to Airmen. Make the following statement "FOR INFORMATION ON CURRENT NOTAM's, CONTACT THE NEAREST FLIGHT SERVICE STATION."

**j.** Military training activity. Broadcast a statement for MTR and MOA activity within 100 NM of your facility at least 30 minutes prior to the start of, and until the activity is concluded.

*Phraseology:*

"MILITARY TRAINING ACTIVITY ADVISORY. HIGH-SPEED MILITARY OPERATION(S) BEING CONDUCTED BELOW 10,000 FEET WITHIN 100 NM OF (name) FSS. CONTACT (name) FSS FOR DETAILS ON THIS ACTIVITY."

**k.** Density altitude. Include the statement "Check Density Altitude" as part of the surface weather broadcast for any station with a field elevation of 2000 feet MSL or above that meets the following criteria:

| Field Elevation | Temperature(F) |
|---|---|
| 2000-2999 | 85 degrees or higher |
| 3000-3999 | 80 degrees or higher |
| 4000-4999 | 75 degrees or higher |
| 5000-5999 | 70 degrees or higher |
| 6000-6999 | 65 degrees or higher |
| 7000-higher | 60 degrees or higher |

### 2-22. TESTING TWEB EQUIPMENT

When TWEB equipment will be tested broadcast an advisory to this effect. Care shall be exercised to ensure no obsolete information is broadcast during a testing period.

### 2-23. REDUCED BROADCAST

TWEB service may be reduced during the hours of 2200-0500 local time. The hours may be less;

e.g., 0000-0500 or 2200-0400, but not greater. Resumption of full broadcast service should be adjusted seasonally to coincide with daylight hours. During the period of reduced broadcast, record a brief statement of the general outlook (from available forecast material) for the next 12 hours.

## 2-24. SERVICE MAY BE SUSPENDED

TWEB service may be suspended:

**a.** For routine maintenance only during periods when weather conditions within 100 miles of the broadcast outlet are equal to or better than a ceiling of 3,000 feet and visibility of 5 miles.

**b.** When the equipment fails. If a malfunction occurs in the recording or control unit but the tape transport unit remains operative, continue broadcasting current data. Remove data as it becomes obsolete.

**c.** Alaska—during periods when the TWEB equipment is inoperative, the SWB shall be made on outlets used for TWEB where the capability exist.

## 2-25. MONITORING

**a.** At TWEB equipment locations, listen to at least one complete TWEB cycle each hour and correct any noted irregularities.

**b.** The control facility shall monitor the transmissions through the local outlet. If practicable, the FSS associated with a remoted outlet shall monitor the transmissions through the L/MF monitor receiver for a sufficient period each hour to observe voice quality and clarity.

**c.** Promptly correct, or inform the TWEB facility of any irregularities observed.

## 2-26. thru 2-29. RESERVED

## Section 4. VOR TWEB

### 2-30. GENERAL

This transcribed broadcast service provides continuous aeronautical and meteorological information on VOR facilities using ATIS-type equipment.

### 2-31. CONTENT

The sequence and content of transcribed broadcast material shall be:

**a.** Introductory Announcement: "TRANSCRIBED BROADCAST, AVIATION WEATHER (time), ZULU OBSERVATIONS UNLESS OTHERWISE STATED".

**b.** Hourly surface reports (including PIREP's) for the parent station and a maximum of five adjacent stations.

**c.** Terminal forecast information for the parent station and for one other hub location (facility option) including valid time for the forecast involved.

*Phraseology:*

"AVIATION FORECASTS VALID UNTIL (time) ZULU, (forecast text)."

**d.** Adverse conditions extracted from FA Flight Precautions, WST, WS, WA, CWA, and AWW.

**e.** PIREP request. Broadcast a request for PIREP's when appropriate.

*Phraseology:*

"PILOT WEATHER REPORTS REQUESTED (location/area) FOR (icing, turbulence, cloud tops, etc.). CONTACT FLIGHT WATCH OR THE NEAREST FLIGHT SERVICE STATION AT THE CONCLUSION OF THIS BROADCAST."

**f.** NOTAM Information. Make the following statement: "FOR INFORMATION ON CURRENT NOTAM's, CONTACT THE NEAREST FLIGHT SERVICE STATION."

**g.** Military training activity. Broadcast an advisory on MOA/MTR activity as specified in paragraph **2-21j.**

### 2-32. REDUCED BROADCAST (VOR)

The hours of broadcast may be reduced in accordance with paragraph 2-24.

### 2-33. MONITORING (VOR)

At VOR TWEB equipment locations, listen to at least one complete TWEB cycle each hour and correct any noted irregularities.

### 2-34. thru 2-39. RESERVED

# Section 5. PILOTS AUTOMATIC TELEPHONE WEATHER ANSWERING SERVICE (PATWAS)

## 2-40. GENERAL

PATWAS provides a continuous telephone recording of meteorological information. At PATWAS facilities where the telephone is connected to the TWEB the information contained in the broadcast shall be in accordance with the TWEB format.

## 2-41. CONTENT

Prepare and disseminate data according to the following script.

**a.** Introduction."THIS BROADCAST PREPARED AT (time) LOCAL, (time) ZULU. AVIATION WEATHER SUMMARY FOR A 50 NAUTICAL MILE RADIUS OF (location), VALID UNTIL (time) ZULU.

**b.** Adverse Conditions.

*Phraseology:*

"FLIGHT PRECAUTION (text)."

**c.** VNR statement.

*Phraseology:*

V-F-R FLIGHT NOT RECOMMENDED (location, if applicable) DUE TO (conditions)." Reference paragraph 3-10.b(2).

**d.** Synopsis.

**e.** Current Conditions.

(1) Ceilings and visibility conditions.

(2) Clouds: Bases, tops and layers.

(3) Icing, affected levels, intensity and type.

(4) Turbulence: affected levels, intensity and type.

(5) Weather radar report or analysis.

(6) PIREP's.

**f.** Surface Winds.

**g.** Forecast. Brief summary.

**h.** Winds Aloft.

**i.** NOTAM's. Make the following statement: "FOR INFORMATION ON CURRENT NOTAM's, CONTACT THE NEAREST FLIGHT SERVICE STATION."

**j.** Military Training Activity.

*Phraseology:* "MILITARY TRAINING ACTIVITY ADVISORY, HIGH SPEED MILITARY OPERATION(S) BEING CONDUCTED BELOW 10,000 FEET WITHIN 100 NAUTICAL MILES OF (name) FSS. CONTACT (name) FSS FOR DETAILS ON THIS ACTIVITY."

**k.** Request for PIREPs.

*Phraseology:*

"PILOT WEATHER REPORTS ARE REQUESTED (location/area) FOR (icing, turbulence, cloud tops, etc.). CONTACT FLIGHT WATCH OR THE NEAREST FLIGHT SEVICE STATION TO REPORT THESE CONDITIONS OR OTHER PERTINENT IN-FLIGHT WEATHER THAT YOU ENCOUNTER EN ROUTE."

**l.** Closing Announcement.

(1) When all available information is recorded.

*Phraseology:*

"FOR ADDITIONAL INFORMATION OR SERVICES PLEASE DIAL (telephone number)."

(2) When information is incomplete due to recording limitation.

*Phraseology:*

FOR INFORMATION ON CURRENT (e.g., FDC NOTAM's or MTR ACTIVITY) PLEASE DIAL (telephone number)."

Suspension Announcement

*Phraseology:*

"REGULAR RECORDED WEATHER SUMMARY WILL BE RESUMED AT (time) LOCAL(time) ZULU. FOR BRIEFING OR FLIGHT PLAN SERVICE DIAL (telephone number)."

## 2-42. PATWAS BROADCAST PROCEDURES

Prepare PATWAS broadcasts at 0500, 0900, 1300, 1700, and 2200 Local time using the following procedures.

**Note.**Recording times may be adjusted with regional approval.

**a.** The introduction should contain a general description of the weather products available as part of the PATWAS broadcast. It should state the area of coverage of the broadcast.

(1) The service area may be configured to meet individual facility needs; i.e., 100 NMR, route oriented, TWEB route data, etc.

(2) Valid time shall not exceed 5 hours.

**b.** Summarize adverse conditions. Include WST, WS, WA, CWA, Flight Precautions in FA, AWW, and any other available information that may adversely affect flight in the PATWAS area.

**c.** VFR not recommended statement. When actual or forecast conditions, surface based or aloft, are such as to make visual flight (VFR) doubtful,include this statement in the broadcast.

**d.** Synopsis. The information included in the synopsis should be a reflection of current and forecast conditions included in the broadcast. Use synopsis products prepared by selected WSFOs or extracted from the synopsis section of the area forecast. The synopsis may be updated using valid current information from other weather products or by consultation with an associated WSFO.

**e.** Current conditions. Summarize current weather conditions over the broadcast area. Include PIREPs on conditions reported aloft and radar reports or a summary of observed radar echos from local equipment.

**f.** Surface winds. Provide surface wind summarized from local reports.

**g.** Forecast. Summarize forecast conditions over the broadcast area.

**h.** Winds aloft. Summarize winds aloft as forecast for the local station or as interpolated from forecasts of adjacent stations for levels 3000 through 9000 feet or a minimum of at least two forecast levels above the highest terrain.

**i.** NOTAM's. The NOTAM statement must be included to alert pilots that aeronautical information that may affect their flight is not included as part of the broadcast and must be requested by direct contact with a FSS.

**j.** Military training activities. Include the MOA/MTR broadcast when training activity will be conducted within 100NM of the FSS, at least 30 minutes prior to start of, and until the activity is concluded.

**k.** Request for PIREPs. When weather conditions within the broadcast area meet the requirements for soliciting PIREPs, include a request in the broadcast.

**l.** Closing announcement. The appropriate closing announcement phraseology shall be in accordance with the script and included at the end of all recordings.

### 2-43. PATWAS ANNOUNCEMENTS

If service is reduced during the period 2200-0500 local time, record a general outlook for the area and the suspension announcement on the script. Instructions contained within this handbook, paragraph 2-23, shall apply.

### 2-44. MONITORING

Recordings shall be monitored and checked for accuracy immediately after recording and hourly. After each recording, the PATWAS shall be checked for accuracy by calling the PATWAS telephone number. Hourly checks may be accomplished using local monitoring.

### 2-45. thru 2-49. RESERVED

## Section 6. SCHEDULED WEATHER BROADCASTS (ALASKA ONLY)

### 2-50. GENERAL

The SWB shall be made at H +15 each hour. Consistent with priority of duties, begin all broadcasts promptly on schedule.

### 2-51. SURFACE REPORTS

The SWB shall include not more than 12 hourly surface reports (except as outlined in **a.**below) selected from:

**a.** Local report of the broadcast location and outlets. Broadcast additional reports from one or more airports in the immediate vicinity, including LAWRS, when conditions vary sufficiently to affect aircraft operations; e.g., ANC, MRI, and EDF are "locals."

**b.** Reports from locations outward within 150 NM from the broadcast location, beginning with the first station east of true north and continuing clockwise.

**Note.** —At locations where 150 NM is not adequate, broadcast reports from locations outward within a pertinent distance from the broadcast location.

### 2-52. OUTLETS

Make the SWB on all en route NAVAID's controlled by your facility, except VOR or TVOR used for ATIS service or TWEB service.

### 2-53. CONTENT

Include, as available, items in a SWB in the following order:

**a.** ALNOT alert announcement.

**b.** Hourly sequence weather reports, including remarks and appended NOTAM's.

**c.** Weather Advisories (WST, WS, WA, CWA, AWW, FA Flight Precautions).

**d.** Pilot Weather Reports (PIREPs).

**e.** Radar Weather Reports (RAREP's).

**f.** NOTAM's not published in the Notices to Airmen (Class II) Publication.

**g.** Lost or overdue aircraft notice (ALNOT).

**h.** Include a statement for MTR/MOA activity within 100 NM of your facility at least 30 minutes prior to the start of and until the activity is concluded.

**Reference**—paragraph **2-12h.**

### 2-54. PROCEDURES

**a.** Broadcast the local report as the first and last sequence weather report of the broadcast. Broadcast the other reports in the clockwise order of their selection.

**b.** Announce the time (last two digits of the observation time) of special (SP) weather reports when a SP supersedes an hourly sequence report. Extract from the regular reports those items which are pertinent and are not included in the SP; e.g., AIRVILLE, AIRVILLE, SPECIAL REPORT, ONE ZERO OBSERVATION, etc.

**c.** Speak the items in a SWB as follows:

(1) Introduction—Say: "Aviation broadcast, weather...."

(2) Broadcast the surface report as follows:

| Element | Announce |
|---|---|
| 1. Location Name | Twice. |
| 2. Sky condition | As reported. |
| 3. Visibility | As reported. |
| 4. Weather Phenomena | As reported. |
| 5. Temperature[1] | When 40 degrees or less or 85 degrees or higher |
| 6. Dewpoint | When temperature/dewpoint spread is 5 degrees or less, give both. |
| 7. Surface wind[1] [2] | Direction and speed when 10 knots or more. |
| 8. Altimeter[1] [2] | Local report only. |
| 9. Remarks | In accordance with paragraph **2-6h** |

[1] Always give these elements in the local report of the broadcasting station.

[2] Read from instruments in the A/G console, when available.

**d.** Close the SWB by saying: "THE TIME IS (To the nearest ¼ minute in two digits and a fraction)."

### 2-55. SUSPENSION OF SWB

Alaska—SWB service may be suspended:

**a.** Between 2200 and 0500 LST where in so doing personnel and/or equipment savings will accrue. The hours of suspension may be less; e.g., 0000-0500 or 2200-0400, but not greater. The service resumption time should be adjusted seasonally so that service availability coincides with daylight hours.

**b.** Indefinitely at TWEB equipment (FAA 5210) locations where a VOR (paragraph **2-20a**) is used as a TWEB outlet. Continue the SWB for 30 days after implementing TWEB service on a VOR and include the announcement:

> "ADDITIONAL WEATHER DATA ARE BROADCAST CONTINUALLY ON (name) VOR, FREQUENCY (frequency)."

# Chapter 3. PILOT BRIEFING

## Section 1. GENERAL

### 3-1. PRE-DUTY REQUIREMENTS

**a.** Before assuming pilot briefing duties, familiarize yourself sufficiently with aeronautical and weather conditions to effectively provide briefing service. This includes:

(1) General location of weather causing systems and general weather conditions for the entire contiguous United States and/or other briefing areas as appropriate; e.g., Alaska, Hawaii, Mexico, Canada, Puerto Rico, etc.

(2) Detailed information of current and forecast weather conditions within your flight service area.

(3) Other pertinent items such as NOTAM's, MTR/MOA activity, etc.

**b.** Accomplish this in accordance with paragraph 1-33 and pertinent facility directives.

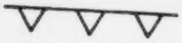
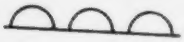
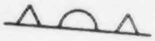
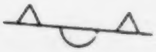
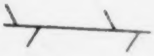
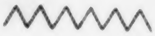
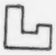
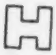
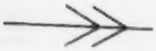
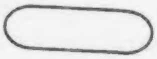
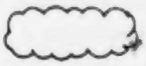
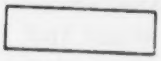
### 3-2. PREFLIGHT BRIEFING DISPLAY

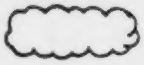
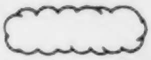
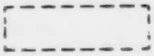
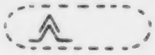
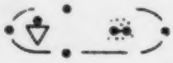
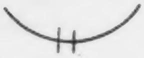
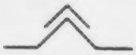
Provide a preflight briefing display for specialist/pilot use. The contents and method of display shall be based on individual facility requirements; e.g., available equipment, space, etc. Additional displays, as required, shall be provided to ensure availability of information at all inflight and preflight positions. At the discretion of facility management, provide a separate display for pilot use. All material in such displays shall be kept updated. Facsimile charts shall have a valid time, and should be enhanced in accordance with paragraph 3-3.

### 3-3. WEATHER DISPLAY SYMBOLS

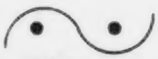
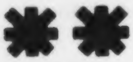
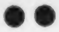
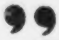
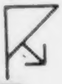
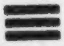
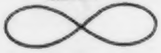
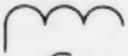
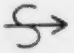
The utility of facsimile charts is greatly enhanced by coloring and shading. Use the following symbols and coloring on all weather chart displays. Different colors may be used to enhance black and white CCTV displays.

**a.** Map Features:

| Type | Symbol | Color |
|---|---|---|
| Cold front |  | blue |
| Warm front |  | red |
| Occluded front |  | purple |
| Stationary front |  | red and blue |
| Instability line | ——••–••—— | purple |
| Convergence line |  | green |
| Trough | —— —— —— | brown |
| Ridge |  | yellow |
| Low pressure center |  | red |
| High pressure center |  | blue |
| Jet streams |  | black |
| Isotherms | ———— | red |
| Isotachs | - - - - - - | yellow |
| Freezing level aloft | 80 - - - - - 80 | red |
| IFR conditions |  | red |
| MVFR conditions |  | blue |
| Line of echoes |  | red |

| Type | Symbol | Color |
|---|---|---|
| Overcast Clouds (36-48 Hour Prog Only) |  | Orange |
| Area of echoes |  | green |
| Severe Weather area |  | red |
| Turbulence areas |  | red |
| Precipitation areas |  | green |
| Icing Symbols |  | red |
| Turbulence symbols |  | red |

**b.** Precipitation and obstruction to vision:

| Type | Symbol | Color |
|---|---|---|
| Freezing precipitation |  | red |
| Snow |  | green |
| Rain |  | green |
| Drizzle |  | green |
| Thunderstorm |  | red |
| Fog |  | yellow |
| Haze |  | yellow |
| Smoke |  | black |
| Dust |  | brown |

**c.** The weather graphic display should include, but not necessarily be limited to, the following analysis, prognosis, and data charts:

(1) Weather Depiction

(2) Surface Analysis

(3) Forecast Winds Aloft

(4) Current Winds Aloft

(5) National Radar Summary

(6) 850 MB

(7) 700 MB

(8) 500 MB

(9) 300 MB

(10) 200 MB

(11) Lifted Index—Precipitable water freezing level—mean relative humidity.

(12) 12-hour and 24-hour low level significant weather prognosis.

(13) Tropopause maximum wind/shear; high level significant weather prognosis.

(14) 36 and 48 hour surface prognosis.

**d.** The listed charts which cannot be displayed, shall nevertheless be retained for specialist/pilot use.

## 3-4. FORECASTS, WARNINGS, AND ADVISORIES

**a.** Use only weather forecasts, warnings, and advisories issued by an NWS office (including CWSU's); the U.S. military or foreign governments.

**b.** Use the information in the Meteorological Impact Statement (MIS) for preduty briefings, background, and supplemental information only. The MIS is a traffic flow planning product and is not to be used as an integral part of a briefing presentation.

**c.** The "OUTLOOK" section of WST's includes meteorological discussion information. Extract pertinent forecast data concerning convective activity location, movement, and intensity for briefing purposes. Do not provide discussion type information unless requested by the pilot.

**d.** When a NWS forecast meets amendment criteria, request assistance from the appropriate NWS office.

## 3-5. UNAVAILABILITY OF DATA

Use all available means to obtain the data required to brief pilots to their destination. If a complete briefing cannot be provided due to circuit problems or missing data, inform the pilot of this fact; brief to the extent possible; and as appropriate, furnish the pilot with the telephone number of another FSS, a NWS office, or advise the pilot of the time you expect the data to be available.

## 3-6. TYPE OF BRIEFING TO BE CONDUCTED

Provide the pilot with the type briefing requested, i.e., standard, abbreviated or outlook. When it is not clear initially which type briefing is desired, provide the first one or two items requested, and then ask the pilot "Would you like a standard briefing?" If a standard briefing is requested, conduct the briefing in accordance with paragraph 3-

10. If the pilot does not desire a standard briefing, conduct the briefing in accordance with paragraph 3-11 or 3-12.

## 3-7. USE OF FORMS

Use FAA Forms 7233-1, 7233-2, 7233-5 and 7230-21 for recording pilot briefings. Document briefing by one of the following methods:

**a.** FAA Form 7233-2—Use a separate form each day. Two or more forms may be used simultaneously at different operating positions. Complete boxes 1 through 3 on each form. Enter appropriate data in columns 4, 5, 6, 7 (if pertinent), and 8. Pilot's name may be substituted for aircraft identification, if unknown. As applicable, enter "OTLK" (Outlook briefing), "AB" (Abbreviated briefing), and/or "VNR" in column 7.

**b.** FAA Form 7233-1—Check the "pilot briefing" block, fill in "specialist initials" and "time started." As applicable enter "AB," "OTLK" and/or check the "VNR" block.

**c.** FAA Forms 7233-5/7230-21—Enter "PB" in block 14 if a briefing is provided. As applicable, also enter "AB," "OTLK," and/or "VNR" in the same block.

**d.** Where recorders are used, facility management may limit entries on pilot briefing records to those required for facility use.

## 3-8. thru 3-9. RESERVED

## Section 2. PREFLIGHT PILOT BRIEFING

### 3-10. CONDUCT OF STANDARD BRIEFING

**a.** Brief by translating, interpreting and summarizing available data for the intended flight. Do not read individual weather reports or forecasts unless, in your judgment, it is necessary to emphasize an important point or unless specifically requested to do so by the pilot. Obtain the following information if it is pertinent and not evident or already known:

(1) Type of flight planned

(2) Aircraft number or pilot's name

(3) Aircraft type

(4) Departure airport

(5) Route-of-flight

(6) Destination

(7) Flight altitude(s)

(8) ETD and ETE

**b.** Using all sources of weather and aeronautical information, provide the following data when it is applicable to the proposed flight. Provide items 1 through 8 in the sequence listed, except as noted.

(1) Adverse Conditions—Include this element when meteorological or aeronautical conditions are reported or forecast that might influence the pilot to alter the proposed flight. Emphasize conditions that are particularly significant such as low level wind shear; embedded thunderstorms; reported icing; frontal zones along the route of flight; airport closures; air traffic delays, etc. Weather advisories (FA Flight Precautions, WS, WA WST, CWA, AWW) shall be given by stating the type of advisory followed by the pertinent information.

(2) VFR Flight Not Recommended (VNR)—Include this recommendation when VFR flight is proposed, and sky conditions or visibilities are present or forecast, surface or aloft that, in your judgment, would make flight under visual flight rules doubtful. Describe the conditions, affected locations and times, and use the phrase "V-F-R flight is not recommended."

**Examples. —**

"THERE ARE BROKEN CLOUDS ALONG THE ENTIRE ROUTE BETWEEN 9 AND 11 THOUSAND FEET MSL AT THE PRESENT TIME. WITH THE APPROACH OF A COLD FRONT THESE CLOUDS ARE FORECAST TO BECOME OVERCAST AND TO LOWER TO BELOW 7 THOUSAND MSL WITH MOUNTAINS AND PASSES BECOMING OBSCURED. VFR FLIGHT IS NOT RECOMMENDED BETWEEN SALT LAKE CITY AND GRAND JUNCTION AFTER 2200 ZULU."

"VFR FLIGHT IS NOT RECOMMENDED IN THE SEATTLE AREA UNTIL EARLY AFTERNOON. THE CURRENT WEATHER AT SEATTLE IS W3X1F, AND LITTLE IMPROVEMENT IS EXPECTED BEFORE 1800 ZULU."

**Note. —** This recommendation is advisory in nature. The decision as to whether the flight can be conducted safely rests solely with the pilot.

(3) Synopsis—Provide a brief statement describing the type, location and movement of weather systems and/or masses which might affect the proposed flight. This element may be combined with adverse conditions and/or the VNR element, in any order, when it will help to more clearly describe conditions.

(4) Current Conditions—Summarize from all available sources, e.g., SA's, PIREP's, RAREP's, reported weather conditions applicable to the flight. This element may be omitted if the proposed time of departure is beyond two hours, unless the information is requested by the pilot.

(5) En Route Forecast—Summarize from appropriate data, e.g., FA's, prognosis charts, weather advisories, etc., forecast conditions applicable to the proposed flight. Provide the information in a logical order, i.e., climb out, en route, and descent.

(6) Destination Forecast—Provide the destination forecast, including significant changes expected within 1 hour before and after the ETA.

(7) Winds Aloft—Summarize forecast winds aloft for the proposed route. Interpolate wind directions and speeds between levels and stations as necessary. Provide temperature information on request.

(8) Notices to Airmen (NOTAM)

(a) Provide available NOTAM (D) and NOTAM (L) information pertinent to the flight.

(b) Provide FDC NOTAM's within your flight service area which are pertinent to the proposed flight and are not already carried in the Notices to Airmen (Class II) publication.

(c) Combine this element with current conditions when it would be logical and advantageous to do so.

(9) ATC Delays—Inform the pilot of any known ATC delays and/or any flow control advisories on hand that might affect the proposed flight.

(10) Request for Pilot Weather Reports (PIREP's)—Include this element when conditions meet the criteria for solicitation of PIREP's in paragraph 9-13 and any other time that in your judgment, a report of actual inflight conditions would be beneficial.

(11) Other Services— Inform pilots of the availability of En Route Flight Advisory Service, the advantages to be gained by use of the service, and request they participate by providing pilot weather reports to the FW position.

(12) Upon request:

(a) Provide information on military training routes and MOA activity within 100 miles of your facility.

**Note.** — The above procedure does not preclude you from exercising your own best judgment in providing further assistance when you have doubt concerning the adequacy of data being furnished to alert a pilot to the existence of an active MTR or MOA.

(b) Review the Notices to Airmen (Class II) publication and inform the pilot of pertinent notices to airmen and special notices.

(c) Provide approximate density altitude data.

(d) Provide information regarding such items as air traffic service and rules, customs/immigration procedures, ADIZ rules, SAR, etc.

### 3-11. CONDUCT OF ABBREVIATED BRIEFING

Provide an abbreviated briefing when a pilot requests information to supplement mass disseminated data; update a previous briefing; or when the pilot requests that the briefing be limited to specific information. Conduct abbreviated briefings as follows:

**a.** When a pilot desires specific information only, provide the requested information. If adverse conditions are present or forecast, advise the pilot of this fact. Provide details on these conditions in accordance with paragraph **3-10b (1)** if the pilot requests that you do so.

**b.** When a pilot requests an update to a previous briefing, obtain from the pilot the time the briefing was received and necessary background information. To the extent possible, limit the briefing to appreciable changes in meteorological and aeronautical conditions since the previous briefing.

**c.** When a pilot requests information to supplement data obtained through FSS mass dissemination media, obtain pertinent background information, the specific items required by the pilot, and provide the information in the sequence shown in paragraph **3-10b.**

**d.** Solicit PIREP's in accordance with paragraph **3-10b(10).**

### 3-12. CONDUCT OF OUTLOOK BRIEFING

**a.** Provide an outlook briefing when the proposed departure is six or more hours from the time of the briefing. Conduct the briefing in the sequence shown in paragraph **3-10b.** Limit the briefing to forecast data applicable to the proposed flight. Omit items 4 and 7 through 11 unless specifically requested by the pilot.

**b.** When the proposed flight is scheduled to be conducted beyond the valid time of the available forecast material, provide a general outlook and then advise the pilot when complete forecast data will be available for the proposed flight. Upon request, transfer the call to, or furnish the telephone number of the appropriate NWS office.

### 3-13. thru 3-19. RESERVED

# Chapter 4. INFLIGHT SERVICES

## Section 1. GENERAL

### 4-1. OPERATIONAL PRIORITY

**a.** Provide services to aircraft on a "first come, first served" basis as circumstances permit, except the following:

**Reference**—FAR 91.67(b)— An aircraft in distress has the right-of-way over all other air traffic.

**b.** Provide priority service to civilian air ambulance flights (lifeguard). When requested, provide priority to military air evacuation flights (AIR EVAC, MED EVAC). Assist the pilots of air ambulance/evacuation aircraft to avoid areas of significant weather and turbulent conditions. When requested by a pilot, provide notification to expedite ground handling of patients, vital organs, or urgently needed medical materials.

**c.** Provide maximum assistance to SAR aircraft performing a SAR mission.

**d.** Provide special handling as required to expedite Flight Check and SAFI aircraft.

**Note.**— It is recognized that unexpected wind conditions, weather, or heavy traffic flows may affect ability to provide priority or special handling at the specific time requested.

### 4-2. TYPES OF SERVICES

**a.** Radio and Interphone Communications

**b.** Recording Aircraft Contacts

**c.** Briefings

**d.** Monitoring

**e.** Strip Marking

**f.** Broadcast Duty

**g.** Airport Advisory Services (AAS)

**h.** Enroute Flight Advisory Services (EFAS)

**i.** Emergency

### 4-3. BRIEFING

**a.** Provide the pilot with available meteorological and aeronautical information in accordance with paragraph 3-10, 3-11, or 3-12 as appropriate.

**b.** Provide information during routine radio contacts as follows:

(1) When a weather advisory is in effect, i.e., FA Flight Precautions, WA, WS, WST, CWA or AWW, which pertains to an area within 150 NM miles of the aircraft's position, obtain the route and destination if not already known. Deliver the advisory if it is pertinent and the pilot indicates that it has not been received previously.

(2) When the destination is in your station's flight plan area, inform the pilot of any pertinent NOTAM's on hand.

**c.** Interpret and summarize weather radar video displays and issue pertinent information on observed/reported weather areas.

(1) Use all available radar data and PIREP's to determine intensity, tops, area of coverage, movement, etc. See Glossary, Appendix A (Radar Weather Echo Intensity Levels).

(2) Identify data obtained from sources other than radar video display by source and time of observation.

(3) To the extent possible, define area of coverage in relation to VOR's or airways for the route structure being flown. Airports or geographic points may be used to assist the pilot in relating coverage to route of flight or destination.

**Example.** —

A BROKEN LINE OF WEAK TO INTENSE ECHOES COVERS AN AREA ALONG AND 30 MILES EAST OF A LINE FROM THE CRAZY WOMAN VOR TO THE RIVERTON VOR. AVERAGE TOPS BETWEEN TWO-SIX THOUSAND AND THREE-FOUR THOUSAND. THIS LINE IS INCREASING IN INTENSITY. MOVEMENT HAS BEEN FROM THE NW TO SE AT 30 KNOTS. THE LINE INCLUDES AN INTENSE ECHO 15 MILES IN DIAMETER ON VICTOR 298 FORTY-EIGHT MILES SE OF THE WORLAND VOR, TOPS FOUR-THREE THOUSAND. THERE ARE NO KNOWN ECHOES WITHIN 30 NM OF V85-298S AT THIS TIME.

**d.** Inflight specialists shall recommend shifting to the flight watch frequency for en route advisories when weather conditions in an area along the pilot's route of flight so dictate. An example would be a pilot flying into an area of marginal weather farther along his route. It would be advantageous for the pilot to contact the flight watch specialist to pursue an alternate course of action should the need arise.

### 4-4. thru 4-9. RESERVED

## Section 2. RADIO COMMUNICATIONS

### 4-10. FREQUENCY USE

Use radio frequencies for the special purposes for which they are assigned. A frequency may be used for more than one function when required. Use the minimum number of frequencies to conduct all communications. Request pilots to file flight plans on simplex or station discrete frequencies when possible.

### 4-11. AUTHORIZED TRANSMISSIONS

Transmit only those messages necessary for air traffic control or air safety.

**a.** Relay operational information to a scheduled air carrier aircraft or its company as requested when abnormal conditions necessitate such requests. Do not agree to handle such messages on a regular basis.

**b.** Inform an aircraft of the source of any message you relay from an airport manager, a military commander, or other appropriate authority.

**c.** Relay official FAA messages, as required.

**Note. —** The FAA Administrator and Deputy Administrator will use code phrases to identify themselves in air to ground radio communications as follows:

Administrator—"Safe Air One."

Deputy Administrator—"Safe Air Two."

**Example. —**

"MIAMI RADIO, CONVAIR ONE ZERO FOUR, SAFE AIR ONE, (message)."

### 4-12. RADIO MESSAGE FORMAT

Initiate radio communications with an aircraft by using the following format:

**a.** Initial call-up:

(1) Identification of aircraft being called.

(2) Identification of the calling unit.

(3) The type of message to follow, when this will assist the pilot.

(4) The word "over," if required.

**Example. —**

"APACHE THREE FOUR SEVEN SEVEN PAPA ELMIRA RADIO, OVER."

"APACHE THREE FOUR SEVEN SEVEN PAPA ELMIRA RADIO, A-T-C CLEARANCE OVER."

**b.** Replying to call-up from aircraft:

(1) Identification of the aircraft initiating the call up.

(2) Identification of the replying unit.

(3) The word "over", if required.

**Example. —**

"APACHE THREE FOUR SEVEN SEVEN PAPA, ELMIRA RADIO, OVER."

**c.** Use the same format as for initial call-up and reply after communication is established except, after stating the identification of the calling or replying unit, state the message to be sent or acknowledgment of the message received.

**d.** Preface a clearance or instruction intended for a specific aircraft with the identification of that aircraft.

### 4-13. ABBREVIATED TRANSMISSIONS

Transmissions may be abbreviated as follows:

**a.** Use the identification prefix and the last three digits or letters of the aircraft identification after communications have been established and the type of aircraft is known. Do not abbreviate similar sounding aircraft identifications, or the identification of an air carrier or other civil aircraft having an FAA authorized call sign.

**Reference.—** Paragraph 4-35.

**b.** Omit the facility identification after communication has been established.

**c.** Transmit the message immediately after the call up (without waiting for the aircraft's reply) when the message is short and receipt is generally assured.

**d.** Omit the word "over" if the message obviously requires a reply.

### 4-14. ROUTINE RADIO CONTACTS

Record information received from or given to the pilot. Provide aeronautical and meteorological information in accordance with paragraph 4-3. Prior to terminating the contact, provide the following information:

**a.** If the aircraft is operating below 18,000 feet MSL, issue current altimeter setting obtained from direct reading instruments, or received from weather reporting stations. Use the setting for the location nearest the position of the aircraft. If the aircraft is arriving or departing a local airport served by an operating control tower, issue altimeter setting on request only. When the barometric pressure is greater than 31.00" Hg., issue an altimeter setting of 31.00. If the pilot requests the actual barometric pressure, issue it then restate the altimeter setting of 31.00.

**b.** If the aircraft is operating VFR and reports at an incorrect cruising altitude for the direction of flight, issue a VFR cruising altitude advisory.

*Phraseology:*

VFR CRUISING LEVELS FOR YOUR DIRECTION OF FLIGHT ARE:

*From more than 3000 above the surface to but not including 18,000 MSL:*

ODD/EVEN ALTITUDES PLUS FIVE HUNDRED FEET

**Note.** — Facilities located in those areas where VFR altitude separation is below 3,000 feet or above 18,000 MSL shall provide appropriate phraseology examples for local use.

**c.** If a request for the altimeter setting in MILLIBARS is received, use the setting for the location nearest the position of the aircraft and convert to the millibar equivalent value, using the millibar conversion chart. If the MILLIBAR setting is not a whole number, always round down.

# MILLIBAR CONVERSION CHART

| in. | mb. | in. | mb. | in. | mb. | in. | mb. | in. | mb. | in. | m. | in. | mb. | in. | mb. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27.50 | 931.3 | 28.00 | 948.2 | 28.50 | 965.1 | 29.00 | 982.1 | 29.50 | 999.0 | 30.00 | 1015.9 | 30.50 | 1032.8 | 31.00 | 1049.8 |
| 27.51 | 931.6 | 28.01 | 948.5 | 28.51 | 965.5 | 29.01 | 982.4 | 29.51 | 999.3 | 30.01 | 1016.3 | 30.51 | 1033.2 | 31.01 | 1050.1 |
| 27.52 | 931.9 | 28.02 | 948.9 | 28.52 | 965.8 | 29.02 | 982.7 | 29.52 | 999.7 | 30.02 | 1016.6 | 30.52 | 1033.5 | 31.02 | 1050.5 |
| 27.53 | 932.3 | 28.03 | 949.2 | 28.53 | 966.1 | 29.03 | 983.1 | 29.53 | 1000.0 | 30.03 | 1016.9 | 30.53 | 1033.9 | 31.03 | 1050.8 |
| 27.54 | 932.6 | 28.04 | 949.5 | 28.54 | 966.5 | 29.04 | 983.4 | 29.54 | 1000.3 | 30.04 | 1017.3 | 30.54 | 1034.2 | 31.04 | 1051.1 |
| 27.55 | 933.0 | 28.05 | 949.9 | 28.55 | 966.8 | 29.05 | 983.7 | 29.55 | 1000.7 | 30.05 | 1017.6 | 30.55 | 1034.5 | 31.05 | 1051.5 |
| 27.56 | 933.3 | 28.06 | 950.2 | 28.56 | 967.2 | 29.06 | 984.1 | 29.56 | 1001.0 | 30.06 | 1017.9 | 30.56 | 1034.9 | 31.06 | 1051.8 |
| 27.57 | 933.6 | 28.07 | 950.6 | 28.57 | 967.5 | 29.07 | 984.4 | 29.57 | 1001.4 | 30.07 | 1018.3 | 30.57 | 1035.2 | 31.07 | 1052.2 |
| 27.58 | 934.0 | 28.08 | 950.9 | 28.58 | 967.8 | 29.08 | 984.8 | 29.58 | 1001.7 | 30.08 | 1018.6 | 30.58 | 1035.6 | 31.08 | 1052.5 |
| 27.59 | 934.3 | 28.09 | 951.2 | 28.59 | 968.2 | 29.09 | 985.1 | 29.59 | 1002.0 | 30.09 | 1019.0 | 30.59 | 1035.9 | 31.09 | 1052.8 |
| 27.60 | 934.6 | 28.10 | 951.6 | 28.60 | 968.5 | 29.10 | 985.4 | 29.60 | 1002.4 | 30.10 | 1019.3 | 30.60 | 1036.2 | 31.10 | 1053.2 |
| 27.61 | 935.0 | 28.11 | 951.9 | 28.61 | 968.8 | 29.11 | 985.8 | 29.61 | 1002.7 | 30.11 | 1019.6 | 30.61 | 1036.6 | 31.11 | 1053.5 |
| 27.62 | 935.3 | 28.12 | 952.3 | 28.62 | 969.2 | 29.12 | 986.1 | 29.62 | 1003.0 | 30.12 | 1020.0 | 30.62 | 1036.9 | 31.12 | 1053.8 |
| 27.63 | 935.7 | 28.13 | 952.6 | 28.63 | 969.5 | 29.13 | 986.5 | 29.63 | 1003.4 | 30.13 | 1020.3 | 30.63 | 1037.6 | 31.13 | 1054.2 |
| 27.64 | 936.0 | 28.14 | 952.9 | 28.64 | 969.9 | 29.14 | 986.8 | 29.64 | 1003.7 | 30.14 | 1020.7 | 30.64 | 1037.6 | 31.14 | 1054.5 |
| 27.65 | 936.3 | 28.15 | 953.3 | 28.65 | 970.2 | 29.15 | 987.1 | 29.65 | 1004.1 | 30.15 | 1021.0 | 30.65 | 1037.9 | 31.15 | 1054.9 |
| 27.66 | 936.7 | 28.16 | 953.6 | 28.66 | 970.5 | 29.16 | 987.5 | 29.66 | 1004.4 | 30.16 | 1021.3 | 30.66 | 1038.3 | 31.16 | 1055.2 |
| 27.67 | 937.0 | 28.17 | 953.9 | 28.67 | 970.9 | 29.17 | 987.8 | 29.67 | 1004.7 | 30.17 | 1021.7 | 30.67 | 1038.6 | 31.17 | 1055.5 |
| 27.68 | 937.4 | 28.18 | 954.3 | 28.68 | 971.2 | 29.18 | 988.1 | 29.68 | 1005.1 | 30.18 | 1022.0 | 30.68 | 1038.9 | 31.18 | 1055.9 |
| 27.69 | 937.7 | 28.19 | 954.6 | 28.69 | 971.6 | 29.19 | 988.5 | 29.69 | 1005.4 | 30.19 | 1022.4 | 30.69 | 1039.3 | 31.19 | 1056.2 |
| 27.70 | 938.0 | 28.20 | 955.0 | 28.70 | 971.9 | 29.20 | 988.8 | 29.70 | 1005.8 | 30.20 | 1022.7 | 30.70 | 1039.6 | 31.20 | 1056.6 |
| 27.71 | 938.4 | 28.21 | 955.3 | 28.71 | 972.2 | 29.21 | 989.2 | 29.71 | 1006.1 | 30.21 | 1023.0 | 30.71 | 1040.0 | 31.21 | 1056.9 |
| 27.72 | 938.7 | 28.22 | 955.6 | 28.72 | 972.6 | 29.22 | 989.5 | 29.72 | 1006.4 | 30.22 | 1023.4 | 30.72 | 1040.3 | 31.22 | 1057.2 |
| 27.73 | 939.0 | 28.23 | 956.0 | 28.73 | 972.9 | 29.23 | 989.8 | 29.73 | 1006.8 | 30.23 | 1023.7 | 30.73 | 1040.6 | 31.23 | 1057.6 |
| 27.74 | 939.4 | 28.24 | 956.3 | 28.74 | 973.2 | 29.24 | 990.2 | 29.74 | 1007.1 | 30.24 | 1024.0 | 30.74 | 1041.0 | 31.24 | 1057.9 |
| 27.75 | 939.7 | 28.25 | 956.7 | 28.75 | 973.6 | 29.25 | 990.5 | 29.75 | 1007.5 | 30.25 | 1024.4 | 30.75 | 1041.3 | 31.25 | 1058.2 |
| 27.76 | 940.1 | 28.26 | 957.0 | 28.76 | 973.9 | 29.26 | 990.9 | 29.76 | 1007.8 | 30.26 | 1024.7 | 30.76 | 1041.7 | 31.26 | 1058.6 |
| 27.77 | 940.4 | 28.27 | 957.3 | 28.77 | 974.3 | 29.27 | 991.2 | 29.77 | 1008.1 | 30.27 | 1025.1 | 30.77 | 1042.0 | 31.27 | 1058.9 |
| 27.78 | 940.7 | 28.28 | 957.7 | 28.78 | 974.6 | 29.28 | 991.5 | 29.78 | 1008.5 | 30.28 | 1025.4 | 30.78 | 1042.3 | 31.28 | 1059.3 |
| 27.79 | 941.1 | 28.29 | 958.0 | 28.79 | 974.9 | 29.29 | 991.9 | 29.79 | 1008.8 | 30.29 | 1025.7 | 30.79 | 1042.7 | 31.29 | 1059.6 |
| 27.80 | 941.4 | 28.30 | 958.3 | 28.80 | 975.3 | 29.30 | 992.2 | 29.80 | 1009.1 | 30.30 | 1026.1 | 30.80 | 1043.0 | 31.30 | 1059.9 |
| 27.81 | 941.8 | 28.31 | 958.7 | 28.81 | 975.6 | 29.31 | 992.6 | 29.81 | 1009.5 | 30.31 | 1026.4 | 30.81 | 1043.3 | 31.31 | 1060.3 |
| 27.82 | 942.1 | 28.32 | 959.0 | 28.82 | 976.0 | 29.32 | 992.9 | 29.82 | 1009.8 | 30.32 | 1026.8 | 30.82 | 1043.7 | 31.32 | 1060.6 |
| 27.83 | 942.4 | 28.33 | 959.4 | 28.83 | 976.3 | 29.33 | 993.2 | 29.83 | 1010.2 | 30.33 | 1027.1 | 30.83 | 1044.0 | 31.33 | 1061.0 |
| 27.84 | 942.8 | 28.34 | 959.7 | 28.84 | 976.6 | 29.34 | 993.6 | 29.84 | 1010.5 | 30.34 | 1027.4 | 30.84 | 1044.4 | 31.34 | 1061.3 |
| 27.85 | 943.1 | 28.35 | 960.0 | 28.85 | 977.0 | 29.35 | 993.9 | 29.85 | 1010.8 | 30.35 | 1027.8 | 30.85 | 1044.7 | 31.35 | 1061.6 |
| 27.86 | 943.4 | 28.36 | 960.4 | 28.86 | 977.3 | 29.36 | 994.2 | 29.86 | 1011.2 | 30.36 | 1028.1 | 30.86 | 1045.0 | 31.36 | 1062.0 |
| 27.87 | 943.8 | 28.37 | 960.7 | 28.87 | 977.7 | 29.37 | 994.6 | 29.87 | 1011.5 | 30.37 | 1028.4 | 30.87 | 1045.4 | 31.37 | 1062.3 |
| 27.88 | 944.1 | 28.38 | 961.1 | 28.88 | 978.0 | 29.38 | 994.9 | 29.88 | 1011.9 | 30.38 | 1028.8 | 30.88 | 1045.7 | 31.38 | 1062.6 |
| 27.89 | 944.5 | 28.39 | 961.4 | 28.89 | 978.3 | 29.39 | 995.3 | 29.89 | 1012.2 | 30.39 | 1029.1 | 30.89 | 1046.1 | 31.39 | 1063.0 |
| 27.90 | 944.8 | 28.40 | 961.7 | 28.90 | 978.7 | 29.40 | 995.6 | 29.90 | 1012.5 | 30.40 | 1029.5 | 30.90 | 1046.4 | 31.40 | 1063.3 |
| 27.91 | 945.1 | 28.41 | 962.1 | 28.91 | 979.0 | 29.41 | 995.9 | 29.91 | 1012.9 | 30.41 | 1029.8 | 30.91 | 1046.7 | 31.41 | 1063.7 |
| 27.92 | 945.5 | 28.42 | 962.4 | 28.92 | 979.3 | 29.42 | 996.3 | 29.92 | 1013.2 | 30.42 | 1030.1 | 30.92 | 1047.1 | 31.42 | 1064.0 |
| 27.93 | 945.8 | 28.43 | 962.8 | 28.93 | 979.7 | 29.43 | 996.6 | 29.93 | 1013.5 | 30.43 | 1030.5 | 30.93 | 1047.4 | 31.43 | 1064.3 |
| 27.94 | 946.2 | 28.44 | 963.1 | 28.94 | 980.0 | 29.44 | 997.0 | 29.94 | 1013.9 | 30.44 | 1030.8 | 30.94 | 1047.7 | 31.44 | 1064.7 |
| 27.95 | 946.5 | 28.45 | 963.4 | 28.95 | 980.4 | 29.45 | 997.3 | 29.95 | 1014.2 | 30.45 | 1031.2 | 30.95 | 1048.1 | 31.45 | 1065.0 |
| 27.96 | 946.8 | 28.46 | 963.8 | 28.96 | 980.7 | 29.46 | 997.6 | 29.96 | 1014.6 | 30.46 | 1031.5 | 30.96 | 1048.4 | 31.46 | 1065.4 |
| 27.97 | 947.2 | 28.47 | 964.1 | 28.97 | 981.0 | 29.47 | 998.0 | 29.97 | 1014.9 | 30.47 | 1031.8 | 30.97 | 1048.8 | 31.47 | 1065.7 |
| 27.98 | 947.5 | 28.48 | 964.4 | 28.98 | 981.4 | 29.48 | 998.3 | 29.98 | 1015.2 | 30.48 | 1032.2 | 30.98 | 1049.1 | 31.48 | 1066.0 |
| 27.99 | 947.9 | 28.49 | 946.8 | 28.99 | 981.7 | 29.49 | 998.6 | 29.99 | 1015.6 | 30.49 | 1032.5 | 30.99 | 1049.4 | 31.49 | 1066.4 |

## 4-15. RADIO COMMUNICATIONS TRANSFER

Transfer radio communications by specifying to the aircraft the location name of the facility to be contacted.

*Phraseology:*

CONTACT (name of facility) ON (frequency)

Omit the location name when transferring communications to another specialist within your facility.

**Examples. —**

"CONTACT FLIGHT WATCH ON ONE TWO TWO POINT ZERO."

"CONTACT RADIO ON ONE TWO TWO POINT SIX."

## 4-16. ATC CLEARANCES, ADVISORIES, OR REQUESTS

**a.** Notify ATC via interphone of a pilot's request for clearance and include the airport of departure in the request. Relay ATC clearances, advisories, and requests verbatim. When clearances include a release or void time, give a time check when relaying the clearance.

**b.** Prefix all ATC clearances advisories, or requests with the appropriate phrase "ATC CLEARS," "ATC ADVISES," etc.

**c.** When issuing information, relaying clearnaces, or instructions, ensure acknowledgement by the pilot.

**d.** If altitude, heading, or other items are read back by the pilot, ensure the readback is correct. If incorrect or incomplete, make correction as appropriate.

**Note.—** Pilots may acknowledge clearances, instructions, or information by using "Wilco," "Roger," "Affirmative," or other appropriate words or remarks. (Reference AIM paragraph 192c.)

## 4-17. DEPARTURE REPORTS

When an aircraft which has filed an IFR flight plan requests a VFR departure through a terminal facility, FSS, or remote communication facility:

**a.** After obtaining approval from the facility/sector responsible for issuing the IFR clearance, an aircraft planning IFR flight may be authorized to depart VFR. Inform the pilot of the proper frequency and, if appropriate, where or when to contact the facility responsible for issuing the clearance.

*Phraseology:*

VFR DEPARTURE AUTHORIZED. CONTACT (facility) ON (frequency) AT (location or time, if required) FOR CLEARANCE.

**b.** If the facility/sector responsible for issuing the clearance is unable to issue a clearance, inform the pilot and suggest that the delay be taken on the ground. If the pilot insists upon taking off VFR and obtaining an IFR clearance in the air, inform the facility/sector holding the flight plan of the pilot's intentions and, if possible, the VFR departure time.

**c.** Immediately after an aircraft is airborne, or such a report is received, transmit the aircraft identification and departure time to the control facility from which you received the clearance.

**Note.—** This includes known VFR departure times of aircraft which are to obtain IFR clearances when airborne.

## 4-18. FLIGHT PROGRESS REPORTS

Interphone to the appropriate ATC facility the aircraft identification, position, time, altitude, estimate of next reporting point, name of subsequent reporting point, and any pilot remarks or requests including amended flight plan data.

## 4-19. ARRIVAL/MISSED APPROACH REPORTS

Relay to the appropriate ATC facility, by the most expeditious means available, the time that an IFR aircraft lands, cancels, or executes a missed approach.

## 4-20. NON-DELIVERY OF MESSAGES

Inform ATC when a message has not been delivered:

**a.** Within 3 minutes of receipt; or,

**b.** Within 3 minutes after the specified delivery time; or,

**c.** By a specified cancellation time.

## 4-21. BROADCAST (BLIND TRANSMISSION) OF MESSAGES

Broadcast messages as requested by ATC. If no accompanying transmitting instructions are received, transmit the message 4 times—once on receipt and at approximately three-minute intervals thereafter.

## 4-22. PENETRATION OF POSITIVE CONTROL AIRSPACE (PCA)

If a VFR aircraft position report indicates penetration of positive control airspace:

**a.** Inform the pilot about the positive control airspace and request his intentions.

**b.** Inform the ARTCC immediately.

## 4-23. thru 4-25. RESERVED

## Section 3. INTERPHONE COMMUNICATIONS

### 4-26. INTERPHONE TRANSMISSION PRIORITIES

Give priority to interphone transmissions as follows:

**a.** *First priority.* Emergency messages including essential information on aircraft accidents or suspected accidents. After actual emergency has passed, give a lower priority to messages relating to that accident.

**b.** *Second priority.* Clearance and control instructions.

**c.** *Third priority.* Movement and control messages using the following order of precedence when possible:

1. Progress reports.
2. Departure or arrival reports.
3. Flight plans.

**d.** *Fourth priority.* Movement messages on VFR aircraft.

### 4-27. PRIORITY INTERRUPTION

Use the words "emergency" or "control" to interrupt lower priority messages when you have an emergency or control message to transmit.

### 4-28. MESSAGE TERMINATION

Terminate interphone messages with your operating initials. Examples of Service F communications:

**a.** Manual signaling:

FSS—(signals center manually)

Center—"Salt Lake City Center" (or "Sector D5").

FSS—"Missoula radio, Missoula progress Apache 1234."

Center—"Go ahead."

FSS—"Over Missoula...etc. HB."

Center—"CT."

**b.** Voice signaling:

Center—"Portland Radio this is Seattle Center, clearance."

FSS—"Portland Radio, go ahead."

Center—"Army Four Five Zero Six Two cleared to ... etc. BS"

FSS—"IR."

### 4-29. RESERVED

## Section 4. RADIO AND INTERPHONE PHRASEOLOGY

### 4-30. ICAO PHONETICS

Use the ICAO pronunciation of numbers and, as necessary to clarify individual letters, the ICAO radiotelephony alphabet and pronunciation in the following ICAO Pronunciation Table.

| Character | Word | Pronunciation |
|---|---|---|
| 0 | Zero | ZE—RO |
| 1 | One | WUN |
| 2 | Two | TOO |
| 3 | Three | TREE |
| 4 | Four | FOW—ER |
| 5 | Five | FIFE |
| 6 | Six | SIX |
| 7 | Seven | SEV—EN |
| 8 | Eight | AIT |
| 9 | Nine | NIN—ER |
| A | Alfa | AL FAH |
| B | Bravo | BRAH VOH |
| C | Charlie | CHAR LEE |
| D | Delta | DELL TAH |
| E | Echo | ECK OH |
| F | Foxtrot | FOKS TROT |
| G | Golf | GOLF |
| H | Hotel | HOH TELL |
| I | India | IN DEE AH |
| J | Juliett | JEW LEE ETT |
| K | Kilo | KEY LOH |
| L | Lima | LEE MAH |
| M | Mike | MIKE |
| N | November | NO VEM BER |
| O | Oscar | OSS CAH |
| P | Papa | PAH PAH |
| Q | Quebec | KEH BECK |
| R | Romeo | ROW ME OH |
| S | Sierra | SEE AIR AH |
| T | Tango | TANG GO |
| U | Uniform | YOU NEE FORM |
| V | Victor | VIK TAH |
| W | Whiskey | WISS KEY |
| X | X-ray | ECKS RAY |
| Y | Yankee | YANG KEY |
| Z | Zulu | ZOO LOO |

Note: Syllables to be emphasized in pronunciation are in bold face.

### 4-31. EMPHASIS FOR CLARITY

Emphasize appropriate digits, letters, or similar sounding words to aid in distinguishing between similar sounding aircraft identifications.

Additionally:

**a.** Notify each pilot concerned when communicating with aircraft having similar sounding identifications.

**Examples. —**

"American five twenty one and American twenty one, transmissions being made to each of you on this frequency."

"Advisory to Cessna one three two four, transmissions to Cessna one two three four also being made on this frequency."

**b.** When initiating calls on interphone voice lines, identify the line on which the call is being made.

**Examples. —**

"Martinsburg Radio, this is Washington Center on the 64 line, clearance."

"Indianapolis Center, Dayton Radio on the Departure 82 line."

### 4-32. WORDS AND PHRASES

Use the words or phrases in radiotelephone and interphone communications, as contained in the "Pilot/Controller Glossary" (see **Appendix A**).

### 4-33. NUMBER USAGE

State numbers as follows:

**a.** Serial numbers—the separate digits

**Example: —**

| Number | Statement |
|---|---|
| 11,495 | "One one four niner five." |
| 20,069 | "Two zero zero six niner." |

**b.** Altitudes or flight levels;

(1) Altitudes—the separate digits of the thousands plus the hundreds.

**Example. —**

| Altitude | Statement |
|---|---|
| 17,900 | "One seven thousand niner hundred." |

(2) Flight levels—the words "flight level" followed by the separate digits of the flight level.

**Examples. —**

| Flight Level | Statement |
|---|---|
| 180 | "Flight level one eight zero." |
| 275 | "Flight level two seven five." |

**c.** General time information—the 4 separate digits of the hour and minutes, based on the 24-hour clock in terms of Coordinated Universal Time (UTC).

**Examples. —**

| Time (12 hr.) | Time (24 hr.) | Statement |
|---|---|---|
| 1:15 a.m. | 0115 | "Zero one one five." |
| 1:15 p.m. | 1315 | "One three one five." |

(1) Upon request—the 4 separate digits of the hours and minutes in terms of UTC, followed by local standard time equivalents.

**Example. —**

| Time | Statement |
|---|---|
| 1430 PST (2230 UTC) | "Two two three zero Zulu, one four three zero Pacific." |

(2) Time check—the word "time" followed by the separate digits of the hour, minutes, and nearest quarter minute.

**Example. —**

| Time | Statement |
|---|---|
| 1415 ¼ | "Time, one four one five and one-quarter." |

(3) Abbreviated time—the separate digits of the minutes only.

**Examples. —**

| Time | Statement |
|---|---|
| 1415 | "One five." |
| 1420 | "Two zero." |

**d.** Field elevation—the words "field elevation," followed by the separate digits of the elevation.

**Examples. —**

| Elevation | Statement |
|---|---|
| 17 feet | "Field elevation, one seven." |
| 187 feet | "Field elevation, one eight seven." |
| 2817 feet | "Field elevation, two eight one seven." |

**e.** The number "0," except where it appears in the group form—the word "zero."

**Examples. —**

"Field elevation one six zero."

"Cessna one six zero seven."

**f.** Altimeter setting—the word "altimeter," followed by the separate digits of the altimeter setting.

**Example. —**

| Setting | Statement |
|---|---|
| 30.01 | "Altimeter, three zero zero one." |

**g.** Surface wind—the word "wind," followed by separate digits of the indicated wind direction to the nearest 10-degree multiple, the word "at," and the separate digits of the indicated velocity in knots.

**Examples. —**

"Wind, zero three zero at two five."

"Wind, two seven zero at one five peak gusts three five."

**h.** Heading—the word "heading," followed by the 3 separate digits of the number of degrees, but omit the word "degrees." Use heading 360 degrees to indicate a north heading.

**Examples. —**

| Heading | Statement |
|---|---|
| 5 degrees | "Heading, zero zero five." |
| 30 degrees | "Heading, zero three zero." |
| 360 degrees | "Heading, three six zero." |

**i.** Radar beacon codes—the separate digits of the 4-digit code.

**Examples. —**

| Code | Statement |
|---|---|
| 1000 | "One zero zero zero." |
| 2100 | "Two one zero zero." |

**j.** Runways—the word "runway," followed by the separate digits of the runway designation. For a parallel runway, state the word "left," "right," or "center," if the letter "L," "R," or "C" is included in the designation.

**Examples. —**

| Designation | Statement |
|---|---|
| 3 | "Runway three." |
| 8L | "Runway eight left." |
| 27R | "Runway two seven right." |

**k.** Frequencies—the separate digits of the frequency, inserting the word "point" where the decimal occurs. Omit digits after the second digit to the right of the decimal point. When the frequency is in the L/MF band, include the word "kilohertz."

**Examples. —**

| Frequency | | Statement |
|---|---|---|
| 126.55 | MHz | “One two six point five five.” |
| 369.0 | MHz | “ three six niner point zero.” |
| 121.5 | MHz | “One two one point five.” |
| 135.275 | MHz | “One three five point two seven.” |
| 302 | kHz | “ Three zero two kilohertz.” |

**l.** Speeds—the separate digits of the speed followed by the words “knots.”

**Examples. —**

| Speed | Statement |
|---|---|
| 250 | “Two five zero knots.” |
| 185 | “One eight five knots.” |
| 95 | “Niner five knots.” |

**m.** Miles—the separate digits of the mileage followed by the word “mile/s.”

**Example. —**

| Miles | Statement |
|---|---|
| 30 miles | “ Three zero mile arc east of Nottingham.” |

## 4-34. FACILITY IDENTIFICATION

Identify facilities as follows:

**a.** Airport traffic control towers—state the name of the facility, followed by the word “tower.” Where military and civil airports are located in the same general area and have similar names, state the name of the military service, followed by the name of the military facility and the word “tower.”

**Examples. —**

“Columbus Tower.”

“Barksdale Tower.”

“Navy Jacksonville Tower.”

**b.** Air route traffic control centers—state the name of the facility, followed by the word “center.”

**c.** Approach control facilities, including RAPCON's, RATCF's, and ARAC's — state the name of the facility, followed by the word “approach.” Where military and civil facilities are located in the same general area and have similar names, state the name of the military service, followed by the name of the military facility and the word “approach.”

**Examples. —**

“Denver Approach.”

“Griffiss Approach.”

“Navy Jacksonville Approach.”

**d.** Function within a terminal facility—state the name of the facility, followed by the name of the function.

**Examples. —**

“Boston Departure.”

“LaGuardia Clearance Delivery.”

“O'Hare Ground.”

**e.** When calling or replying on an interphone line which connects only 2 facilities, you may omit the facility name.

**Example. —**

“Bradford High, handoff”.

**f.** FAA flight service stations—state the name of the station, followed by the word “radio.”

**Example. —**

“Pittsburgh Radio”.

**g.** Radar facilities having ASR or PAR but not providing approach control service—state the name of the facility, followed by the letters “G-C-A.”

**Examples. —**

“Chanute G-C-A.”

“Corpus Christi G-C-A.”

“Davison G-C-A.”

## 4-35. AIRCRAFT IDENTIFICATION

Use the full identification in reply to aircraft with similar sounding identifications. For other aircraft, the same identification may be used in reply that the pilot used in his initial call up except use the correct identification after communications have been established.

**Reference—** Paragraph 4-13

**a.** Civil—state the aircraft type, the model, the manufacturer's name, or the prefix “November,” followed by the numbers/letters of the aircraft registration.

**Examples. —**

“Jet Commander One Four Two Four.”

“Douglas Three Zero Five Romeo.”

“Bonanza One Two Three Four Tango.”

“November One Two Three Four Golf.”

**Note.—**The prefix “November” denotes a U.S. aircraft registry.

(1) Air carrier and other civil aircraft having FAA authorized call signs — state the call sign followed by the flight number in group form.

**Examples. —**

“American Five Twenty-one.”

“Commuter Six Eleven.”

“General Motors Thirty-seven.”

(2) If aircraft identification becomes a problem when the procedures specified in (1) are used, the call sign shall be restated after the flight number of the aircraft involved.

**Examples. —**

"American Five Twenty-one American."

"Commuter Six Eleven Commuter."

"General Motors Thirty-seven General Motors."

**Reference** —Order 7210.3-210

(3) Air taxi and commercial operators not having FAA authorized call signs—state the prefix "TANGO" on initial contact, if used by the pilot, followed by the registration number. The prefix may be dropped in subsequent communications.

**Examples. —**

"Tango Mooney Five Five Five Two Quebec."

"Tango One Two Three Four."

**b.** Civilian airborne ambulance—state the word "Lifeguard" followed by the type and numbers/letters of the registration number.

**Example. —**

"LIFEGUARD Cessna Two Six Four Six."

**c.** U.S. Military—State one of the following:

(1) The service name, followed by the word "copter", when appropriate, and the last 5 digits of the serial number.

**Examples. —**

"Navy Five Six Seven One Three."

"Coast Guard Six One Three Two Seven."

"Army Copter Three Two One Seven Six."

**Note. —** If aircraft identification becomes a problem, procedures in paragraph 4-35a.(2) apply.

(2) Special military operations—state one of the following, followed by the last 5 digits of the serial number:

(a) Air evacuation flights—"AIR EVAC," "MARINE AIR EVAC," or "NAVY AIR EVAC."

**Example. —**

"AIR EVAC One Seven Six Five Two."

(b) Rescue flights—"(Service name) RESCUE."

**Example.—** "Air Force RESCUE Six One Five Seven Niner".

(c) Military Airlift Command—"MAC."

**Example.—** "MAC Seven Eight Five Six Two".

(d) Special Air Mission—"SAM."

**Example.—** "SAM Niner One Five Six Two."

(e) USAF Contract Aircraft—"LOGAIR."

**Example.—** "LOGAIR Seven Five Eight Two Six."

(3) Military tactical and training:

(a) U.S. Air Force, Air National Guard, Military District of Washington priority aircraft, and USAF civil disturbance aircraft—pronounceable words of 3, 4, 5, or 6 letters followed by a 4, 3, 2, or 1-digit number.

**Examples. —**

"Paul two zero."

"Pat one five seven."

"Gaydog four."

**Note. —** When the "Z" suffix described in paragraph 6-56 is added to identify aircraft piloted by USAF undergraduate pilots, the call sign will be limited to a combination of 6 characters.

(b) Navy or Marine fleet and training command aircraft—the service name and 2 letters or a digit and a letter (use letter phonetic equivalents), followed by 2 or 3 digits.

**Examples. —**

"Navy Golf Alfa Two One."

"Marine Four Charlie Two Three Six."

(c) NORAD interceptors—an assigned double letter 2-digit flight number.

**Example. —**

"Alfa Kilo One Five."

**d.** Foreign registry—state one of the following:

(1) Civil—the letters or digits of the aircraft registration or call sign.

**Example. —**

"C-F-L-R-B."

(2) Air carrier—the abbreviated name of the operating company, followed by:

(a) The letters or digits of the registration or call sign.

**Example. —**

"Air France F-L-R-L-G."

(b) The flight number in group form.

**Example. —**

"Scandinavian Sixty-eight."

(3) Military, except Canada, the name of the country and the military service followed by the separate digits or letters of the registration or call sign. Canadian Armed Force aircraft shall be identified by the word "CANFORCE" followed by the separate digits of the serial number except that the Transport Command of the Canadian Armed Force shall be identified by the words "CANADIAN MILITARY" and the Canadian Coast Guard shall be identified as "CANADIAN COAST GUARD" followed by the separate digits of the serial number.

**Examples. —**

"CANFORCE Five Six Two Seven."

"Brazilian Air Force Five Three Two Seven Six."

**e.** Presidential aircraft and Presidential family aircraft:

(1) When the President is aboard a military aircraft, state the name of the military service, followed by the word "One."

**Examples. —**

"Air Force One."

"Army One."

"Marine One."

(2) When the President is aboard a civil aircraft, state the words "Executive One."

(3) When a member of the President's family is aboard any aircraft, if the U. S. Secret Service or the White House Staff determines it is necessary, state the words "Executive One Foxtrot."

**f.** Vice Presidential aircraft:

(1) When the Vice President is aboard a military aircraft, state the name of the military service, followed by the word "Two."

**Examples. —**

"Air Force Two."

"Army Two."

"Marine Two."

(2) When the Vice President is aboard a civil aircraft, state the words "Executive Two."

(3) When a member of the Vice President's family is aboard any aircraft, if the U.S. Secret Service or the White House Staff determines it is necessary, state the words "Executive Two Foxtrot."

**g.** Other special flights:

(1) Department of Energy flights—state the letters "RAC" (use phonetic alphabet equivalents) followed by the last 4 separate digits of the aircraft registration number.

**Example. —**

"Romeo Alfa Charlie One Six Five Three."

(2) Semiautomatic Flight Inspections—state the code name "SAFI" followed by the separate digits of the grid number as filed.

**Example. —**

"SAFI Five Two Seven."

(3) Flight Inspection of Navigational Aids—state the call sign "FLIGHT CHECK" followed by the digits of the registration number.

**Example. —**

"FLIGHT CHECK Three Niner Six Five Four."

(4) USAF aircraft engaged in aerial sampling missions—State the call sign "SAMP" followed by the last three digits of the serial number.

**Example. —** "SAMP Three One Six."

**h.** Use a pilot's name in identification of an aircraft only in special or emergency situations.

## 4-36. AIRCRAFT TYPES

Describe aircraft as follows:

**a.** Military:

(1) Military designator, with number spoken in group form, or

**Examples. —**

"F-Four" "B-Fifty-eight".

"Air Force bomber" "Navy fighter".

"Fighter" "Bomber".

(2) Service and type, or

(3) Type only, if no confusion or misidentification is likely.

**b.** Air Carrier:

(1) Manufacturer's name or model.

(2) Add the company name or other identifying features when confusion or misunderstanding is likely.

**Examples. —**

"Lockheed Ten-eleven."

"American Seven-oh-seven."

"United Seven Thirty-seven."

**c.** General Aviation and Air Taxi:

(1) Manufacturer's model, name, or designator.

(2) Add color when considered advantageous.

**Examples. —**

"Tri-Pacer."

"PA-Twenty-two."

"Cessna Three-ten."

"Green Apache."

## 4-37. AIRWAYS AND ROUTES

Describe airways, routes or jet routes as follows:

**a.** VOR/VORTAC/TACAN airways or jet routes—state the word "Victor" or the letter "J," followed by the number of the airway or route in group form. For RNAV routes, add the word "Romeo".

**Examples. —**

"Victor Twelve."

"J Five Thirty-three."

"Victor Seven Ten Romeo."

"J Eight Thirty Romeo."

"Offset one zero miles right of J Eight Thirty Romeo."

**b.** VOR/VORTAC/TACAN alternative airways—State the word "Victor," followed by the number of the airway in group form and the alternative direction.

**Example. —**

"Victor Twelve South."

**c.** L/MF airways—state the color of the airway, followed by the number in group form.

**Example. —**

"Blue Eighty One."

**d.** North American Route—State the words "North American Route" followed by the number of the route in group form.

**Example. —**

"North American Route Fifty."

**e.** MTR's—State the letter followed by the number of the route in group form.

**Example. —**

"IR Five Thirty-one."

## 4-38. NAVAID TERMS

Describe radials, arcs, courses, bearings and quadrants of NAVAIDS as follows:

**a.** VOR/VORTAC/TACAN/MLS NAVAIDS—State the name of the NAVAID, followed by the separate digits of the radial/azimuth (omitting the word "degrees"), and the word "radial/azimuth."

**Example. —**

"Appleton zero five zero radial."

"Lindburg Runway Two Seven MLS two six zero azimuth."

**b.** Arcs about VOR-DME/VORTAC/TACAN/MLS NAVAIDS—State the distance in miles from the NAVAID, followed by the words "mile arc," the direction from the NAVAID in terms of the 8 principal points of the compass, the word "of," and the name of the NAVAID.

**Example. —**

"Two zero mile arc southwest of O'Hare Runway Two Seven Left MLS."

**c.** Quadrant within a radius of NAVAID—State direction from NAVAID in terms of the quadrant; e.g., NE, SE, SW, NW, followed by the distance in miles from the NAVAID.

**Example. —** "Cleared to fly northeast quadrant of Philipsburg VORTAC within four zero mile radius."

**Reference.—** Glossary (Quadrant).

**d.** Nondirectional beacons—State the course to or the bearing from the radio beacon, omitting the word "degree," followed by the words "course to" or "bearing from," the name of the radio beacon and the words "radio beacon."

**Example. —**

" Three four zero bearing from Randolph Radio Beacon."

## 4-39. NAVAID FIXES

Describe fixes determined by reference to a radial/localizer/azimuth and distance from a VOR-DME/VORTAC/TACAN/ILS-DME or MLS as follows:

**a.** When a fix is not named, state the name of the NAVAID followed by a specified radial/localizer/azimuth, and state the distance in miles followed by the phrase "mile fix."

**Examples. —**

"Appleton zero five zero radial three seven mile fix."

"Reno localizer back course four mile fix."

"Hobby Runway One Two MLS zero niner zero azimuth one two mile fix."

**b.** When a fix is named, state the name of the fix followed by the phrase "D-M-E FIX or WAYPOINT, as appropriate."

**Examples. —**

"Shaum D-M-E Fix."

"Shaum Waypoint."

**c.** Use specific terms to describe a fix. Do not use expressions such as "passing Victor Twelve" or "passing J Eleven."

## 4-40. thru 4-49. RESERVED

## Section 5. MONITORING

### 4-50. DUTIES

When the Air Traffic Division has assigned your facility the responsibility for monitoring NAVAIDS, take the following actions, as appropriate:

**a.** VOR/VORTAC

(1) Aurally check the identification at the beginning of each watch.

**Note.** — Upon commissioning of second generation (FA-9996) VOR, aural monitoring is not required.

(2) Record the check on FAA Form 7230-4.

(3) If a monitor category 2 exists, notify the center.

**Note 1.** — VOR's VORTAC's and TACAN's have an automatic course alignment and signal monitor (ACM). This monitor is usually connected to a remote alarm. An automatic transfer and shutdown unit (ATU) is installed as part of the ACM. When the ACM detects a malfunction, the ATU switches the range to a standby transmitter. If the standby transmitter does not work properly, the ATU will shut down the facility.

**Note 2.** — Monitoring of VOR test signals (VOT) is accomplished by a light or buzzer monitor and is of local concern only.

**Note 3.** — VOR and VORTAC monitor categories:

(a) Category 1—alarm feature and identification heard at control point.

(b) Category 2—monitor equipment failure and identification not heard at control point but aircraft reports indicate facility operating normally.

(c) Category 3—not constantly monitored by other than ACM and ATU.

**b.** TACAN (joint use airports):

(1) Aurally check the identification at the beginning of each watch.

(2) Immediately notify the responsible military authority when an alarm is received.

(3) Consider the aid inoperative when the alarm cannot be silenced and the identification cannot be heard on the aural monitor.

**Note 1.** — The military authority will issue NOTAMs for TACAN's.

**Note 2.** — *Alaska* Tie-in facilities shall transmit NOTAM's originated by military officials on military aids.

**c.** DME (monitored by the same facility that monitors the associated VOR, VORTAC, or ILS):

(1) Press the VORW/DME control oscillator lever to "facility on" position at the beginning of each watch.

(2) Record the check on FAA Form 7230-4.

**d.** NDB (class HH, H, and MH):

(1) Monitor continuously by automatic means beacons used as IFR aids.

(2) Check operations at least once each hour if an automatic alarm is not available.

**e.** ILS:

(1) Check the ILS monitor panel at the beginning of each watch and record the system status on Form 7230-4.

(2) When there are indications that a component (localizer, glide path, outer marker, middle marker) has failed, shut off that component and allow the rest of the system to continue operating.

**Note.** — Not all ILS components will be provided with remote monitor and control lines (on/off capability). If the failure indication is caused by a control line or control station monitor failure the Airways Facilities technician shall advise if that component will be restored to operation and the monitor status.

**f.** Compass Locators:

(1) Monitor continuously by automatic means.

(2). Check the operation at least once each hour if an automatic alarm is not available.

(3) If the provisions of (1) or (2) cannot be met, the compass locator may be considered monitored if it is equipped with an automatic monitor and shutdown feature at the site. In this case responsibility for monitoring shall not be assigned to the air traffic facility.

**g.** DF Equipment:

(1) Compare the DF indication and the bearing of a known transmitter site once each watch.

(2) Check the reception of all frequencies once each day if there is a suitable signal available.

### 4-51. MALFUNCTIONS

Take the following action when the alarm signal or a report indicates an AT system component malfunctions:

**a.** Try to restore the aid to normal operation.

**b.** If unable to restore it, discontinue its use and:

(1) Notify the appropriate IFR control facility/sector.

(2) Notify the appropriate FSS as necessary.

(3) Notify AF personnel in accordance with Order 6030.31, Restoration of Operational Facilities.

(4) Issue any necessary NOTAM and take other NOTAM related actions as appropriate.

**Reference.**—7210.3 paragraph 350 and 7930.2 paragraph 5-23.

**Note.** — When AF personnel silence the monitoring systems of any NAVAID, they will assume responsibility for the monitoring function.

## 4-52. AIRCRAFT REPORTED MALFUNCTIONS

When an aircraft reports a NAVAID malfunction, take the following actions:

**a.** Request a report from a second aircraft.

**b.** If the second aircraft reports normal operations, continue use, and inform the first aircraft. Record the incident on FAA Form 7230-4, Daily Record of Facility Operation, or appropriate Military Form.

**c.** If the second aircraft confirms the malfunction or in the absence of a second aircraft report, activate the standby equipment or request the monitor facility to activate, as appropriate.

**d.** If normal operation is reported after the standby equipment is activated, continue use, record the incident on FAA Form 7230-4 or appropriate Military Form and notify AF personnel (the Systems Engineer of the ARTCC when an en route aid is involved), as appropriate.

**e.** If continued malfunction is reported after the standby equipment is activated or the standby equipment cannot be activated, inform AF personnel and request advice on whether or not the aid should be shut down. In the absence of a second aircraft report, advise the AF personnel of the time of the initial aircraft report and the estimated time a second aircraft report could be obtained.

**Note 1.** — The sequence of the actions are not intended to circumvent good judgment should the circumstances under which the malfunction report is made so dictate.

## 4-53. ADJUSTMENTS TO NAVAIDS

Notify the appropriate air traffic control facility before any adjustment (including a transmitter change) to a VOR, TACAN, or DME transmitter is made which might cause a momentary interruption or an abnormal indication on aircraft instruments.

## 4-54. NAVAID FLIGHT CHECK

**a.** Provide aircraft engaged in flight inspection of NAVAIDS with maximum assistance. Unless otherwise agreed to, maintain direct contact with the pilot and exchange information regarding known traffic in the area and his intentions.

**Note 1.** — Many flight inspections are accomplished using automatic recording equipment and an uninterrupted flight is necessary for successful completion of the mission. The workload for the limited number of aircraft engaged in these activities requires strict adherence to a schedule.

**Note 2.** — Flight Inspection operations which require special participation of ground personnel, specific communications, or radar operation capabilities are considered to require special handling. These flights are coordinated with appropriate facilities before departure.

**Reference.** — Order 8200.1, U.S. Standard Flight Inspection Manual, and Order 8240.41, Flight Inspection/Air Traffic Coordination.

**b.** When notified (normally by the flight inspection aircraft) of a flight check that will include transmitter changes, take the following action:

(1) Inform appropriate control facilities of anticipated transmitter changes and proposed duration of the flight check.

(2) Change transmitters when requested.

## 4-55. MONITORING OF NAVAIDS BY AIRWAY FACILITIES PERSONNEL

Airway Facilities personnel may assume monitor of any navigational aid provided they coordinate with the responsible Air Traffic monitor facility. Record the time on FAA Form 7230-4 that Airway Facilities personnel monitor each NAVAID.

## 4-56. INTERPHONES AND RADIO

**a.** Interphone (Service F)

Monitor interphone continuously. Keep speaker volumes at a sufficient level to hear all transmissions. Notify the control station and the local telephone company immediately when Service F fails.

**b.** Radio

Monitor assigned radio frequencies continously. Keep speaker volume at a sufficient level to hear transmissions.

## 4-57. thru 4-69. RESERVED

## Section 6. STRIP MARKING

### 4-70. GENERAL

**a.** Use FAA Form 7230-21 or FAA Form 7233-5 to record flight progress data or in-flight pilot briefs. Flight notification messages may be used as substitutes. Use authorized control information symbols in combination with clearance symbols, abbreviations, location identifiers, and phrase contractions to the extent possible for recording position reports, traffic clearances and other data on flight progress strips. To provide flexibility, you may use:

(1) Plain language markings to supplement the above when it will aid in understanding the recorded information.

(2) Locally approved contractions and identifiers for frequently used terms and local fixes not listed in either the Contractions or the Location Identifiers Handbooks. Use these only within your facility. Copies of all locally approved contractions and identifiers shall be placed in facility files for record purposes.

(3) Plain sheets of paper to record information when flight progress strip use is not feasible.

(4) You may use blank paper to record lengthy ATC clearances or numerous contacts with the same aircraft in instances such as orientation or emergencies.

**b.** Display Form 7233-1 at the in-flight position on proposed outbound flights which are expected to contact the station. Upon contact:

(1). Record the contact.

(2) Enter the departure time or time VFR flight plan was activated on Form 7233-1.

(3) Give the pilot any new and pertinent briefing information.

(4) Pass the Form 7233-1 to the appropriate operating position for delivery of the flight notification message.

**c.** Use one flight progress strip for each flight, and record all contacts with that flight on the same strip. If supplemental strips are needed for additional writing space, keep the original and supplemental strips together and consider them as one strip.

### 4-71. STANDARD HAND PRINTED CHARACTERS

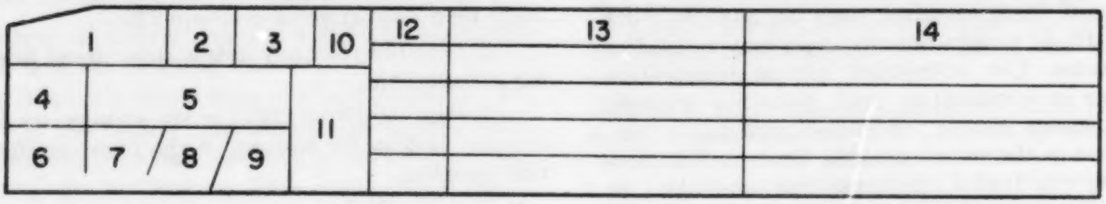
To prevent misinterpretation of data hand printed on flight progress strips use the standard hand printed characters shown below. To correct or update a posted item, draw a horizontal line through it and write the correct or current information immediately adjacent to it within the same space. Draw a line through previously assigned altitude only after the aircraft has reported leaving that altitude. Do not erase any item. When relaying data between facilities, transmit the information in the sequence specified in paragraph 4-72

STANDARD RECORDING OF HAND PRINTED CHARACTERS

| Typed | Hand Printed | Typed | Hand Printed | Typed | Hand Printed | Typed | Hand Printed |
|---|---|---|---|---|---|---|---|
| A | A | J | J | S | S | 1 | 1 |
| B | B | K | K | T | T | 2 | 2 |
| C | C | L | L | U | U | 3 | 3 |
| D | D | M | M | V | V | 4 | 4 |
| E | E | N | N | W | W | 5 | 5 |
| F | F | O | O | X | X | 6 | 6 |
| G | G | P | P | Y | Y | 7 | 7 |
| H | H | Q | Q | Z | Z | 8 | 8 |
| I | I | R | R | | | 9 | 9 |
| | | | | | | 0 | *0 |

*The slant line cross through the numeral zero and the underline of the letter "s" on handwritten portion of the flight progress strips are required only when there is reason to believe the lack of these markings could lead to a misunderstanding. The slant line cross through the numeral zero is required on weather data.

## 4-72. FLIGHT PROGRESS STRIPS (FAA FORMS 7230-21 AND 7233-5)



Use this form as follows:

**a.** Enter as may be required the following numbered items in the correspondingly numbered spaces illustrated above:

(1) Aircraft identification.

**Note.** — To identify IFR aircraft piloted by solo USAF undergraduate pilots, the letter "Z" will be added. Do not use this suffix, however, in ground to air communications.

(2) Type of aircraft and symbol for any special equipment; e.g., DME, RNAV, tranponder.

(3) Filed true airspeed and altitude, if IFR flight plan. Enter altitude for VFR or DVFR only if it is volunteered by the pilot.

(4) Departure point.

(5) Route of flight.

(6) Destination airport.

(7) Actual departure time or time VFR flight plan was activated.

(8) Estimated time of arrival at destination.

(9) Estimated time of fuel exhaustion.

(10) Symbol to indicate type of flight. Use the symbols specified in paragraph 4-74a. In addition, use "I" to indicate IFR, "V" for VFR, "D" for DVFR, and "S" for Special VFR.

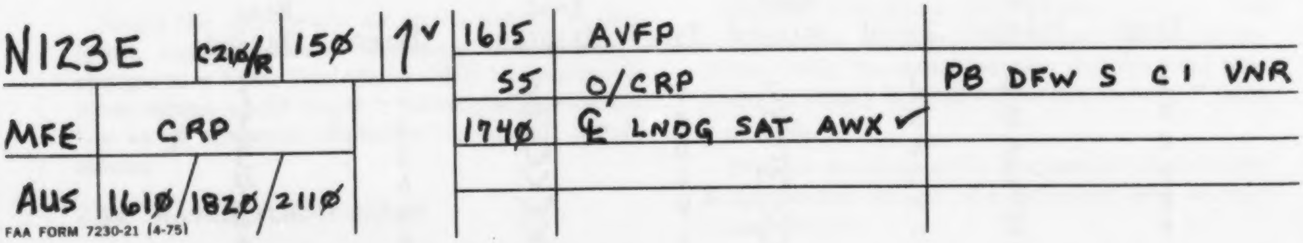
(11) Action time (e.g., overdue time, fuel exhaustion time, LR contact time).

(12) Time of contact—omit if information recorded on the strip is received from sources other than the pilot.

(13) Information received from the aircraft. Also enter any pertinent information received from another facility.

(14) Data issued to the aircraft. Record ATC instructions and clearances completely and exactly. Briefly summarize or identify any other data using the symbols in paragraph 4-74b, if practicable. Do not record issuance of altimeter settings unless that is the only information provided during the contact.

**b.** Example of recording flight progress data:

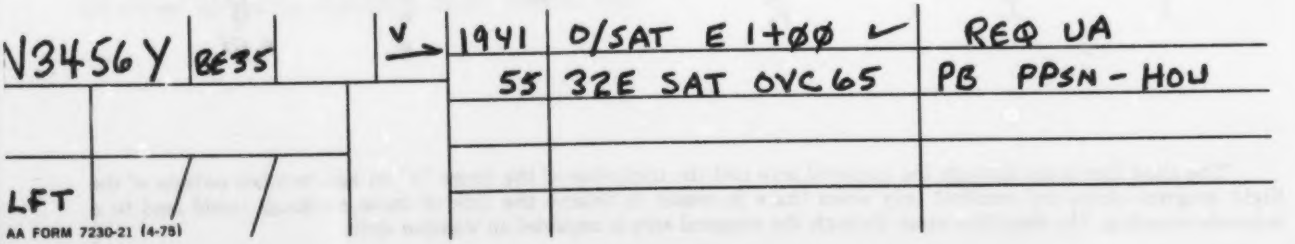


N123E C210/R 150 1V
MFE CRP
AUS 1610/1820/2110

1615 AVFP
55 O/CRP | PB DFW S C I VNR
1740 ℄ LNDG SAT AWX ✓

FAA FORM 7230-21 (4-75)

**c.** Example of recording pilot brief by radio:

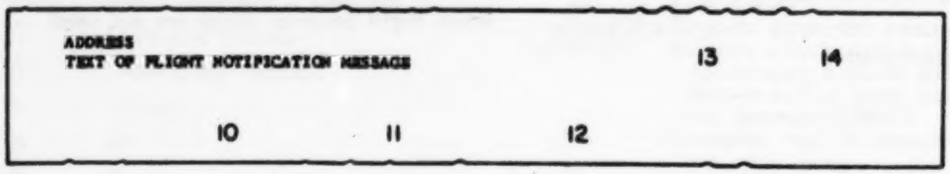


V3456Y BE35 V →
LFT

1941 O/SAT E 1+00 ✓ | REQ UA
55 32E SAT OVC65 | PB PPSN - HOU

AA FORM 7230-21 (4-75)

**d.** When using flight notification messages for recording flight progress data, cut or tear the paper to fit the strip holder. Enter items (10) through (14) in the correspondingly numbered locations illustrated below:



## 4-73. AIRCRAFT CONTACTS

Record aircraft contacts as follows:

**a.** Use a flight progress strip or the proposal or flight notification message to record aircraft contacts.

**b.** If the flight is inbound or an "over" and the station has the aircraft's flight plan, post the contact on the strip containing the flight plan data.

**c.** If the flight is outbound and has filed a flight plan with the station, enter aircraft contact data only on the flight progress strip and indicate "FP" in space 14 to show this data is on a Form 7233-1 filed in the facility.

**d.** If there is no flight plan on file for the aircraft contacting the station, obtain and post the following information:

(1) Aircraft identification.

(2) Type of flight operation (I, V, or D).

(3) Time of contact.

(4) Aircraft contact record.

(5) Other items which are operationally significant to the service rendered.

**e.** If a recorder is used at the inflight position, you may limit entries in the aircraft contact portion of the strip to those necessary for your use.

## 4-74. FLIGHT SERVICE SYMBOLS

**a.** For use in Box 10 of FAA Form 7230-21 and FAA Form 7233-5 to indicate type flight operation.

| | |
|---|---|
| → | OVER FLIGHT |
| ↓ | INBOUND |
| ↗ | OUTBOUND FLIGHT |
| LR | LAKE REPORTING |
| MR | MOUNTAIN REPORTING |
| IR | ISLAND REPORTING |

**b.** Miscellaneous:

| | |
|---|---|
| AA | Airport Advisory |
| CWT | Caution Wake Turbulence |
| DW | Downwind |
| FP | Flight Plan recorded on FAA Form 7233-1 |
| RY | Runway |
| VNR | VFR flight not recommended (pilot brief) |
| DA | Decided Against Flight |
| DD | Decided to Delay Flight |
| IC | Incomplete Briefing |
| PB | Pilot Brief |
| S | SIGMET (WS) and/or Convective SIGMET (WST) |
| A | AIRMET (WA) |

## 4-75. CONTROL SYMBOLOGY

Use authorized control and clearance symbols or abbreviations for recording clearances, reports, and instructions. You may use:

**a.** Plain language markings when it will aid in understanding information.

**b.** Locally approved identifiers. Use these only within your facility and not on data or interphone circuits.

**c.** Plain sheets of paper to record information when flight progress strips are not used.

**4-75 Table 1.** — Clearance Abbreviations

| Abbreviation | Meaning |
|---|---|
| A | Cleared to airport (point of intended landing) |
| B | Center clearance delivered |
| C | ATC clears (when clearance relayed through non-ATC facility) |
| CAF | Cleared as filed |
| D | Cleared to depart from the fix |
| F | Cleared to the fix |
| H | Cleared to hold and instructions issued |
| L | Cleared to land |
| N | Clearance not delivered |
| O | Cleared to the outer marker |
| PD | Cleared to climb/descend at pilot's discretion |
| Q | Cleared to fly specified sectors of a NAVAID defined in terms of courses, bearings, radials or quadrants within a designated radius. |
| T | Cleared through (for landing and takeoff through intermediate point) |
| V | Cleared over the fix |
| X | Cleared to cross (airway, route, radial) at (point) |
| Z | Tower jurisdiction |

**4-75 Table 2.** — Miscellaneous Abbreviations

| Abbreviation | Meaning |
|---|---|
| BC | Back course approach |
| CT | Contact approach |
| FA | Final approach |
| I | Initial approach |
| ILS | ILS approach |
| MA | Missed approach |
| MLS | MLS approach |
| NDB | Nondirectional radio beacon approach |
| OTP | VFR conditions-on-top |
| PA | Precision approach |
| PT | Procedure turn |
| RH | Runway Heading |
| RP | Report immediately upon passing (fix/altitude) |
| RX | Report crossing |
| SA | Surveillance approach |
| SI | Straight-in approach |
| TA | TACAN approach |
| TL | Turn left |
| TR | Turn right |
| VA | Visual approach |
| VR | VOR approach |

## 4-75 Table 3. — Control Information Symbols

| *Symbol* | *Meaning* |
|---|---|
| T→( ) | Depart (direction, if specified) |
| ↑ | Climb and maintain |
| ↓ | Descend and maintain |
| → | Cruise |
| @ | At |
| X | Cross |
| M̶ | Maintain |
| ラ | Join or intercept airway/jet route/ track or course |
| = | While in controlled airspace |
| △ | While in control area |
| ↘△ | Enter control area |
| △↗ | Out of control area |
| NW ↘⊙<br>⊙↗NE<br>⊖→ E | Cleared to enter, depart, or through control zone. Indicate direction of flight by arrow and appropriate compass letter. Maintain Special VFR conditions (altitude if appropriate) while in control zone. |
| 250K | Aircraft requested to adjust speed to 250 knots. |
| −20K | Aircraft requested to reduce speed 20 knots. |
| +30K | Aircraft requested to increase speed 30 knots. |
| Ⓦ | Local Special VFR operations in the vicinity of (name) airport are authorized until (time). Maintain special VFR conditions (altitude if appropriate). |
| > | Before |
| < | After or Past |
| $\underline{170}$ (red) | Inappropriate altitude/flight level for direction of flight. (Underline assigned altitude/flight level in red.) |
| / | Until |
| ( ) | Alternate instructions |
| $\underline{\text{Restriction}}$ | Restriction |
| ⊤ | At or Below |

| *Symbol* | *Meaning* |
|---|---|
| ⊥ | At or Above |
| —(Dash) | From—to (route, time, etc.) |
| (Alt)B(Alt) | Indicates a block altitude assignment. Altitudes are inclusive, and the first altitude shall be lower than the second. *Example:* 310B370 |
| V< | Clearance void if aircraft not off ground by (time) |
| ℄ | Pilot cancelled flight plan |
| ✓ | *EN ROUTE:* Aircraft has reported at assigned altitude. *Example:* 80✓ |
| ✓ | *TERMINAL:* Information forwarded (indicated information forwarded as required) |
| ○ (red) | *EN ROUTE:* Information or revised information forwarded. (Circle, in red, inappropriate altitude/flight level for direction of flight or other control information when coordinated. Also circle, in red, the time (minutes and altitude when a flight plan or estimate is forwarded. Use this method in both inter-center and intra-center coordination.) |
| ㊿ | Other than assigned altitude reported (circle reported altitude) |
| $\left\|\frac{10}{6}\right\|$ | DME holding (use with mileages) (Upper figure indicates distance from station to DME fix, lower figure indicates length of holding pattern. In this example, the DME fix is 10 miles out with a 6 mile pattern indicated.) |
| $\overset{\frown}{\text{(Mi.) (dir.)}}$ | DME arc of VORTAC, TACAN, or MLS. |
| C(Freq.) | Contact (facility) on (freq.), (time, fix, or altitude if appropriate). Insert frequency only when it is other than standard. |
| R | Radar contact |
| R | *EN ROUTE:* Requested altitude (preceding altitude information) |
| R̸ | Radar service terminated |
| ✗ | Radar contact lost |
| Ⓡ | Radar handoff (circle symbol when handoff completed) |
| RV | Radar vector |
| R✗ | Pilot resumed own navigation |
| E (red) | EMERGENCY |
| W (red) | WARNING |
| P | Point out initiated. Indicate the appropriate facility, sector, or position. *Example:* PZFW. |

NOTE.—The absence of an airway or route number between two fixes in the route of flight indicates "direct"; no symbol or abbreviation is required.

## 4-76. thru 4-79. RESERVED

## Section 7. AIRPORT ADVISORY SERVICE (AAS)

### 4-80. GENERAL

Airport Advisory Service (AAS) is a terminal service provided by FSS facilities located at airports without an operating control tower.

**Reference.**—7210.3 paragraph 1534.

### 4-81. FREQUENCY

Provide AAS on 123.6 MHz at nontower locations and on the tower local control frequency at an airport with a part-time FAA tower when that facility is not operating. Encourage aircraft to guard 123.6 MHz or the tower local control frequency, as appropriate, while within approximately a 10 mile radius of the airport. (If necessary, issue advisories on the frequency to which the pilot is listening.)

### 4-82. TRAFFIC CONTROL

Do not control air traffic. When there is no control tower in operation and a pilot appears unaware of this fact, inform him as follows:

*Phraseology:*

NO CONTROL TOWER IN OPERATION.

### 4-83. FAVORED RUNWAY

Select the runway most nearly aligned into the wind. If there is no wind, select the runway currently in use or the runway favored by shorter taxiway or other local consideration. When airport management has designated a runway to be used under certain wind or other conditions (and has informed the FSS in writing), issue runway information accordingly.

**a.** When a pilot advises he will use a runway other than the favored or designated runway, inform all known concerned traffic.

**b.** If a pilot requests the distance between an intersection and the runway end, furnish measured data from the local airport intersection takeoff diagram.

### 4-84. ELEMENTS OF AAS

Provide the following information, as appropriate, sequencing the elements to best serve the current traffic situation:

**a.** Wind direction and velocity.

**b.** Favored or designated runway.

**c.** Altimeter setting. However, unless specifically requested by the pilot, this need not be issued to local aircraft operators who have requested this omission in writing or scheduled air carriers. (Reference paragraph 4-14a.)

**d.** Weather as follows:

(1) Ceiling and visibility information to VFR aircraft when less than basic VFR conditions exist.

(2) Visibility to VFR aircraft when it is less than 3 miles in any quadrant.

(3) Where RVR/RVV readout equipment is readily available to the specialist providing airport advisory service, issue touchdown RVR/RVV for the runway in use in accordance with paragraphs 4-88 and 4-89.

(4) To aircraft executing an instrument approach or departure and to the appropriate control facility when:

(a) Ceiling is less than one thousand feet or below the highest circling minimum, whichever is greater, or visibility is less than 3 miles.

(b) Special weather observations are received while weather conditions are as specified in (a), above.

**e.** To a departing aircraft—an advisory to "Check Density Altitude" whenever the field elevation/temperature combination meets the criterion contained in Facility Operation and Administration, 7210.3-285. Omit this advisory if a density altitude computation for that aircraft was included in the preflight briefing.

**f.** Factual information about observed or reported traffic which may constitute a collision hazard. This may include positions of aircraft in flight or aircraft and vehicles operating on the airport.

**Example.** —

"Tri-Pacer on downwind leg for Runway One Four."

**g.** Issue cautionary information to aircraft concerned, if you foresee the possibility of wake turbulence from an aircraft which may have an adverse affect on another aircraft.

*Phraseology:*

CAUTION WAKE TURBULENCE (traffic information).

**Note.** — Since the existence and effect of turbulence is unpredictable, ATS personnel are not responsible for anticipating its existence or affect.

**h.** NOTAM's concerning local NAVAID's and field conditions pertinent to flight.

**i.** Factual information as reported by airport management concerning the condition of the runway surface and describing the accumulation of precipitation. Furnish quality of braking action as received from pilots or airport management to all aircraft as follows:

(1) Describe the quality of braking action using the terms "good," "fair," "poor," or "NIL." If the pilot or airport management reports braking action in other than the foregoing terms, ask them to categorize braking action in these terms.

**Note.** — For bad or no braking action use "NIL."

(2) Include type of aircraft or vehicle from which the report is received.

**Examples.** —

"All runways covered by compacted snow 6 inches deep."

"Braking action poor, reported by an F27."

(3) If the braking action report affects only a portion of a runway, obtain enough information from the pilot or airport management to describe braking action in terms easily understood by the pilot.

**Examples.** —

"Braking action poor first half of runway, reported by a G-2."

"Braking action poor beyond the intersection of Runway 27, reported by a B-727."

**Note.** — Descriptive terms such as first/last half of the runway should normally be used rather than landmark descriptions such as opposite the fire station, south of a taxiway, etc.

**j.** Runway friction measurement readings/values as received from airport management to aircraft as follows:

(1) At locations where friction measuring devices, such as Mu-Meter, Saab Friction Tester (SFT), and Skiddometer are in use, furnish information as received from airport management to pilots on request. Use the name of the device followed by the number for each of three runway segments, a word describing the cause of the runway friction problem, and the time of the report.

**Example.** —

"(Name of device), eight six, seven snow at zero niner three zero."

"(Name of device), thirty-five twenty six, thirty, sleet at one zero one five."

(2) Issue the RUNWAY SURFACE CONDITION and/or the RUNWAY CONDITION READING (RCR), if provided, to all USAF and ANG aircraft. Issue the RCR to other aircraft upon request.

**Example.** — "Ice on runway, RCR zero five, patchy."

**Note.** — USAF has established RCR procedures for determining the average deceleration readings of runways under conditions of water, slush, ice, or snow. The use of RCR code is dependent upon the pilot's having a "stopping capability chart" specifically applicable to his aircraft. USAF offices furnish RCR information at airports serving USAF and ANG aircraft.

**k.** Issue upon request:

(1) Airport taxi routes and traffic patterns.

(2) Authorized instrument approach procedures.

(3) Time information.

(4) Information regarding observed aircraft equipment.

*Phraseology:*

LANDING GEAR APPEARS TO BE DOWN AND IN PLACE.

**l.** Do not approve or disapprove simulated instrument approaches.

### 4-85. CHARTS

Keep charts depicting runways, local taxi routes, airport traffic patterns, and instrument approach procedures convenient to airport advisory position.

### 4-86. AIRPORT NAME

If the airport name is different from the station call and if you believe the pilot is not aware of this fact, state the airport name and words "airport advisory" following the radio call.

### 4-87. SPECIAL VFR CLEARANCE

Provide SVFR services as appropriate in accordance with Chapter 4, Section 9, of this handbook.

### 4-88. RUNWAY VISIBILITY

Where RVR/RVV equipment is operational, irrespective of subsequent operation or nonoperation of navigational or visual aids for the application of RVR/RVV as a takeoff or landing minima, furnish the values for the runway in use in accordance with paragraph 4-89.

**Note.** — Readout capability of different type/model RVR equipment varies. For example, older equipment minimum readout value is 600 feet. Newer equipment may have minimum readout capability as low as 100 feet. Readout value increments also may differ. Older equipment has minimum readout increments of 200 feet. New equipment increments below 800 feet are 100 feet.

**Reference.** — Order 6560.10, Runway Visual Range (RVR). Order 6750.24, ILS Electronic Requirements.

**a.** Issue current touchdown RVR/RVV for the runway/s in use:

(1) When prevailing visibility is 1 mile or less regardless of the value indicated.

(2) When RVR/RVV indicates a reportable value regardless of the prevailing visibility.

**Note.** — Reportable values are: RVR 6,000 feet or less; RVV 1 ½ miles or less.

**b.** Issue mid/rollout RVR when the value of either is less than 2,000 feet and less than the touchdown value.

### 4-89. RVR/RVV

**a.** Provide RVR/RVV information by stating the runway, the abbreviations RVR/RVV, and the indicated value. When issued along with other weather elements, transmit these values in the normal sequence used for weather reporting.

**Examples. —**

"Runway One Four R-V-R two thousand four hundred."

"Runway Three Two R-V-V three quarters."

**b.** When two or more RVR systems serve the runway in use, report the indicated values for the different systems in terms of touchdown, mid, and rollout as appropriate.

**Examples. —**

"Runway Two Two left R-V-R two thousand, rollout one thousand eight hundred."

"Runway Two Seven Right R-V-R one thousand, mid eight hundred, rollout six hundred."

**c.** When there is a requirement to issue an RVR/RVV value and a visibility condition greater or less than the reportable values of the equipment is indicated, state the condition as MORE than or LESS than the appropriate minimum or maximum readable value.

**Examples. —**

"Runway Three Six R-V-R more than six thousand."

"Runway Niner R-V-R one thousand, rollout less than six hundred."

**d.** When a readout indicates a rapidly varying visibility condition (1,000 feet or more for RVR; one or more reportable values for RVV), report the current value followed by the range of visibility variance.

**Examples. —**

"Runway Two Four R-V-R two thousand, variable one thousand six hundred to three thousand."

"Runway Three One R-V-V three-quarters, variable one-quarter to one."

### 4-90. AIRPORT LIGHTING

Operate airport lighting in accordance with a Letter of Agreement using the following procedures.

### 4-91. EMERGENCY LIGHTING

Whenever you become aware that an emergency has or will occur, take action to provide for the operation of all appropriate airport lighting aids as required.

### 4-92. OBSTRUCTION LIGHTS

If controls are provided, turn the lights on between sunset and sunrise.

### 4-93. ROTATING BEACON

If controls are provided, turn the rotating beacon on:

**a.** Between sunset and sunrise.

**b.** Between sunrise and sunset when the reported ceiling or visibility is below basic VFR minima.

### 4-94. APPROACH LIGHTS

Operate approach lights:

**a.** Between sunset and sunrise when one of the following conditions exists:

(1) They serve the landing runway.

(2) They serve a runway to which an approach is being made but aircraft will land on another runway.

**b.** Between sunrise and sunset when the ceiling is less than 1000 feet or the prevailing visibility is 5 miles or less and approaches are being made to:

(1) A landing runway served by the lights.

(2) A runway served by the lights but aircraft are landing on another runway.

(3) The airport, but landing will be made on a runway served by the lights.

**c.** As requested by the pilot.

**d.** As you deem necessary, if not contrary to pilot's request.

**Note.** — In the interest of energy conservation, the ALS should be turned off when not needed for aircraft operations.

### 4-95. ALS INTENSITY SETTINGS

When operating ALS as prescribed in paragraph 4-94, operate intensity controls in accordance with the values in the accompanying intensity setting table except:

**a.** When facility directives specify other settings to meet local atmospheric, topographic, and twilight conditions.

**b.** As requested by the pilot.

**c.** As you deem necessary, if not contrary to pilot's request.

Table.—ALS Intensity Setting.

| Step | Visibility—(Applicable to runway served by lights) | |
|---|---|---|
| | Day | Night |
| 5 | Less than 1 mile* | When requested. |
| 4 | 1 to but not including 3 miles | When requested. |
| 3 | 3 to but not including 5 miles | Less than 1 mile.* |
| 2 | 5 to but not including 7 miles | 1 to 3 miles inclusive. |
| 1 | When requested | Greater than 3 miles. |

* and/or 6,000 feet or less of RVR on the runway served by the ALS and RVR.

*Note. — Daylight steps 2 and 3 provide recommended settings applicable to conditions in subparagraphs b and c.

## 4-96. SEQUENCED FLASHING LIGHTS

Operate Sequenced Flashing Lights:

**Note. —** SFL are a component of the ALS and cannot be operated when the ALS is off.

**a.** When the visibility is less than 3 miles and instrument approaches are being made to the runway served by the associated ALS.

**b.** As requested by the pilot.

**c.** As you deem necessary, if not contrary to pilot's request.

## 4-97. RUNWAY EDGE LIGHTS

Operate the runway edge light system/s serving the runway/s in use as follows:

**a.** As contained in a Letter of Agreement with the Airport Manager.

**b.** As required by facility directives to meet local conditions or requirements.

**c.** Between sunset and sunrise, operate the lights:

(1) For departures—When an aircraft calls for Airport Advisory or requests the lights be turned on until the aircraft reports departing the airport area or 15 minutes after the last contact with the aircraft.

(2) For arrivals—When an aircraft calls for Airport Advisory or when the associated approach control advises that an aircraft is on approach until the aircraft reports/is observed clear of the runway or 15 minutes after last radio contact or arrival time.

**d.** Between sunrise and sunset, turn the lights on as in **c.** (1) and (2) above when the surface visibility is less than 2 miles.

**e.** Different than **a., b., c.,** or **d.** above when:

(1) You consider it necessary, or

(2) Requested by a pilot and no other known aircraft will be adversely affected.

**f.** Do not turn on the runway edge lights when a NOTAM closing the runway is in effect.

**Note. —** Application concerns use for takeoffs/landings/approaches and does not preclude turning lights on for use of unaffected portions of a runway for taxiing aircraft, surface vehicles, maintenance, repair, etc.

**g.** Alaska—The runway lights should remain on from the end of civil twilight to the beginning of civil twilight. If the runway lights are operated part time in this period, broadcast a warning over the airport advisory frequency 2 minutes before turning the lights off.

## 4-98. CHANGING LIGHTED RUNWAYS

**a.** To switch lights.

(1) Advise all known aircraft that the lights are to be changed, specifying runway to be lighted.

(2) Turn on the lights for the new runway 30 seconds before turning off the other runway lights, equipment permitting.

**b.** When a pilot requests that other than the favored runway be lighted and two runways cannot be lighted simultaneously, comply with the request if you have no knowledge of the lighted runway being in use.

## 4-99. SIMULTANEOUS APPROACH AND RUNWAY EDGE LIGHT OPERATION

Turn on the runway edge lights for the runway in use whenever the associated approach lights are on. If multiple runway light selection is not possible, you may leave the approach lights on and switch the runway lights to another runway to accommodate another aircraft.

**Reference. —** paragraph 4-97

## 4-100. MALSR ODALS

Operate MALSR/ODALS that have separate on-off and intensity setting controls in accordance with the the following **Tables** except:

**a.** When facility directives specify other settings to meet local atmospheric, topographic, and twilight conditions.

**b.** As requested by the pilot.

**c.** As you deem necessary, if not contrary to pilot's request.

Table 1.—Two step MALS/One Step RAIL

| Setting | Visibility | |
|---|---|---|
| | Day | Night |
| MALS HI-RAIL ON | Less than 3 miles | Less than 3 miles* |
| MALS LOW | When requested | 3 miles or more |

*Note. — At locations providing part-time flight service, the MALSR shall be set to low intensity during the hours of darkness when the station is unmanned.

Table 2.— Three Step MALS/ Three Step RAIL

| Settings | Visibility | |
|---|---|---|
| | Day | Night |
| 3 | Less than 2 miles | Less than 1 mile |
| 2 | 2 to 5 miles inclusive | 1 to, but not including 3 miles* |
| 1 | When requested | 3 miles or more |

Note. — At locations providing part-time flight service, the air-to-ground radio link shall be activated during the hours of darkness when the station is unmanned. If there is no radio air-to-ground control, the MALSR shall be set on intensity step #2 during the hours of darkness when the station is unmanned. (See 7210.3-1253.)

### 4-101. HIRL ASSOCIATED WITH MALSR

Operate HIRL which control the associated MALSR in accordance with the accompanying intensity setting **Table**, except:

**a.** As requested by the pilot.

**b.** As you deem necessary, if not contrary to the pilot's request.

Table.—HIRL associated with MALSR

| Step | Visibility | |
|---|---|---|
| | Day | Night |
| 5 | Less than 1 mile | When requested. |
| 4 | 1 to but not including 2 miles | Less than 1 mile. |
| 3 | 2 to but not including 3 miles | 1 to but not including 3 miles. |
| 2 | When requested | 3 to 5 miles inclusive. |
| 1 | When requested | More than 5 miles. |

*Note. — When going from a given brightness step setting to a lower setting, rotation of the brightness control to a point below the intended step setting and then back to the appropriate step setting will ensure that the MALSR will operate at the appropriate brightness.

### 4-102. MEDIUM INTENSITY RUNWAY LIGHTS

Operate MIRL or MIRL which control the associated MALSR in accordance with the **Table** except:

**a.** As requested by the pilot.

**b.** As you deem necessary, if not contrary to the pilot's request.

Table.—MIRL Intensity Setting

| Step | Visibility | |
|---|---|---|
| | Day | Night |
| 3 | Less than 2 miles | Less than 1 mile |
| 2 | 2 to 3 miles | 1 to 3 miles |
| 1 | When requested | More than 3 miles |

Reference. — See paragraph 4-101. Note.

### 4-103. HIGH INTENSITY, RUNWAY, RUNWAY CENTERLINE, AND TOUCHDOWN ZONE

Operate high intensity runway and associated runway centerline and touchdown zone lights in accordance with the **Table**, except:

**a.** When facility directives specify other settings to meet local conditions.

**b.** As requested by the pilot.

**c.** As you deem necessary, if not contrary to pilot request.

Table.—HIRL, RCLS, TDZL Intensity Setting

| Step | Visibility | |
|---|---|---|
| | Day | Night |
| 5 | Less than 1 mile* | When requested |
| 4 | 1 to but not including 2 miles | Less than 1 mile |
| 3 | 2 to but not including 3 miles | 1 to but not including 3 miles |
| 2 | When requested | 3 to 5 miles inclusive |
| 1 | When requested | More than 5 miles |

* and/or appropriate RVR/RVV equivalent.

### 4-104. HIRL CHANGES AFFECTING RVR

Keep the appropriate approach controller or PAR controller informed, in advance if possible, of HIRL changes that affect RVR.

### 4-105. HIGH SPEED TURNOFF LIGHTS

Operate high speed turnoff lights:

**a.** Whenever the associated runway lights are used for arriving aircraft. Leave them on until the aircraft has either entered a taxiway or passed the last light.

**b.** As required by facility directives to meet local conditions.

**c.** As requested by the pilot.

### 4-106. RUNWAY END IDENTIFIER LIGHTS

When separate on-off controls are provided, operate runway end identifier lights:

**a.** When the associated runway lights are lighted. Turn the REIL off after:

(1) An arriving aircraft has landed.

(2) A departing aircraft has left the traffic pattern area.

(3) It is determined that the lights are of no further use to the pilot.

**b.** As required by facility directives to meet local conditions.

**c.** As requested by the pilot.

### 4-107. TAXIWAY LIGHTS

Operate taxiway lights serving the taxiways, or portions thereof, in use as follows:

**a.** Between sunset and sunrise—Before an aircraft taxies onto the taxiway (normally at the time taxi information is issued) and until it taxies off it.

**b.** At other times when you consider it necessary and as required by local instructions.

### 4-108. OPERATION OF LANDING DIRECTION INDICATOR

Align the landing direction indicator with the favored or designated runway.

### 4-109. VISUAL APPROACH SLOPE INDICATORS (VASI)

VASI system with remote on-off switching shall be operated when they serve the runway in use and where intensities are controlled in accordance with the Tables, except:

**a.** As required by facility directives to meet local conditions.

**b.** As required by the pilot.

Table 1.—VASI Intensity Setting Two Step System

| Step | Period/Condition |
|---|---|
| High | Day—Sunrise to sunset. |
| Low | Night—Sunset to sunrise. |

Table 2.—VASI Intensity Setting— Three Step System.

| Step | Period/Condition |
|---|---|
| High | Day—Sunrise to sunset. |
| Medium | Twilight—From sunset to 30 minutes after sunset and from 30 minutes before sunrise to sunrise, and during twilight in Alaska.<br>Note. — During a 1 year period, twilight may vary 26 to 43 minutes between 25 and 49N latitude. |
| Low | Night—From 30 minutes after sunset to 30 minutes before sunrise. |

Note. —The basic FAA standard for VASI systems permits independent operation by means of photoelectric device. This system has no on-off control feature and is intended for continuous operation. Other VASI systems in use include those that are operated remotely from the control tower. These systems may consist of either a photoelectric intensity control with only an on-off switch, a two step intensity system, or a three step intensity system.

Reference. — 7210.3-1254, VASI Systems. Handbook 6850.2, Visual Guidance Lighting Systems.

### 4-110. thru 4-129. RESERVED

## Section 8. SPECIAL VFR CLEARANCE

### 4-130. REQUEST FOR SPECIAL VFR CLEARANCE

**a.** If an aircraft operating under visual flight rules attempts to enter, depart, or operate within a control zone contrary to the provisions of FAR 91.105 (visual flight rules), advise the pilot that weather is below VFR minima and request his/her intentions.

*Phraseology:*

WEATHER IS BELOW V-F-R MINIMA. AN AIR TRAFFIC CONTROL CLEARANCE IS REQUIRED FOR OPERATION IN THE (name) CONTROL ZONE. WHAT ARE YOUR INTENTIONS?

**b.** If the pilot requests Special VFR clearance:

(1) Transmit a Special VFR clearance, if appropriate, where a FSS/control facility Special VFR Letter of Agreement exists.

(2) Request a clearance from the control facility where no Special VFR agreement exists.

**Note.** — Helicopter performing hover taxiing operations (normally not above 10 feet) within the boundary of the airport are considered to be taxiing aircraft.

### 4-131. PREDESIGNED SPECIAL VFR CLEARANCES

Transmit predesigned Special VFR clearances only during those periods authorized by the control facility.

**Note.** — The control facility may rescind this authorization at any time.

**a.** Apply these procedures only to aircraft equipped with functioning two-way radio. Refer all requests for no-radio Special VFR operations to the control facility.

**b.** Transmit clearances so that only one aircraft at a time operates in the control zone unless pilots agree that they will maintain visual separation with other aircraft operating in the control zone.

**c.** Record Special VFR clearances and instructions completely and exactly.

**Note.** — Control facilities always retain Special VFR operations authority when IFR operations are being conducted in the control zone. They do not clear an aircraft for an approach until the FSS advises that Special VFR operations have been suspended.

**d.** Apply the following procedures and phraseologies:

(1) Transmit Special VFR clearances only for operations within control zones and on the basis of weather conditions officially reported at the airport of intended operations. If weather conditions are not reported at that airport, transmit a Special VFR clearance whenever the pilot advises he is unable to maintain VFR and requests Special VFR.

*Phraseology:*

"ATC CLEARS (identification) TO ENTER/OUT OF/THROUGH CONTROL ZONE. MAINTAIN SPECIAL VFR CONDITIONS AT OR BELOW (altitude) WHILE IN CONTROL ZONE."

"ATC CLEARS (identification) TO OPERATE WITHIN (name) CONTROL ZONE. MAINTAIN SPECIAL VFR CONDITIONS AT OR BELOW (altitude)."

(2) When the ground visibility officially reported at an airport is less than one mile, treat requests for Special VFR operations at that airport by other than helicopters as follows:

(a) Inform departing aircraft that ground visibility is less than one mile and that a clearance cannot be issued. Inform arriving aircraft, operating outside of the control zone, that ground visibility is less than one mile and that, unless an emergency exists, a clearance cannot be issued.

(b) Inform arriving aircraft, operating within the control zone, that ground visibility is less than one mile, and ask if the aircraft can depart the control zone with a flight visibility of at least one mile. If the aircraft cannot depart the control zone accordingly, or an emergency exists, relay this information to the control facility immediately.

(c) Transmit a clearance to scheduled air carrier aircraft in the United States to conduct operations if ground visibility is not less than one-half mile.

(d) Transmit a clearance to an aircraft to fly through the control zone if the pilot reports flight visibility is at least one mile.

(3) When weather conditions are not officially reported at an airport and the pilot advises the flight visibility is less than one mile, treat requests for Special VFR operations at that airport by other than helicopters as follows:

(a) Inform departing aircraft that a clearance cannot be issued.

(b) Inform arriving aircraft operating outside the control zone that unless an emergency exists, a clearance cannot be issued.

*Phraseology:*

VISIBILITY (value). A-T-C UNABLE ISSUE DEPARTURE/ENTRY CLEARANCE.

(c) Ask an arriving aircraft operating within a control zone if he can depart the control zone with a flight visibility of at least one mile. If the aircraft cannot depart the control zone accordingly or an emergency exists, relay this information to the control facility immediately.

(4) Suspend Special VFR operations when necessary to comply with instructions contained in paragraph 4-131b or when requested by the control facility.

*Phraseology:*

SPECIAL VFR AUTHORIZATION DISCONTINUED. RETURN TO AIRPORT OR DEPART CONTROL ZONE. ADVISE INTENTIONS . . . (after response) REPORT LANDING COMPLETED/LEAVING CONTROL ZONE.

(5) When an aircraft requests a Special VFR clearance to enter the control zone during periods of Special VFR activity, instruct the pilot to maintain VFR conditions outside of the control zone pending arrival/recall/departure of the Special VFR operations.

*Phraseology:*

A-T-C ADVISES (identification) TO MAINTAIN VFR OUTSIDE OF THE (name) CONTROL ZONE PENDING ARRIVAL/RECALL/DEPARTURE OF SPECIAL VFR AIRCRAFT.

**Note.** — FAR 91.107(e) limits the use of Special VFR by pilots of fixed wing aircraft to daylight hours except where the pilot is instrument rated and currently qualified and his aircraft is equipped for IFR flight. Specialists have to assume that a pilot is qualified and his aircraft is properly equipped to fulfill the specific flight for which air traffic control service has been requested.

## 4-132. thru 4-139. RESERVED

## Section 9. EN ROUTE FLIGHT ADVISORY SERVICE (EFAS)

### 4-140. PROGRAM GOALS AND OBJECTIVES

The objective of EFAS is to provide en route aircraft with timely and meaningful weather advisories. This objective is met by providing complete, and accurate information on weather as it exists along a route pertinent to a specific flight, provided in sufficient time to prevent unnecessary changes to a flight plan, but when necessary, permit the pilot to make a decision to terminate the flight or alter course before adverse conditions are encountered.

### 4-141. POSITION RESPONSIBILITIES

**a.** Prior to assuming their duties, flight watch specialists shall carefully review the latest available weather information covering the Flight Watch Area (FWA). A discussion of current weather trends with the specialist being relieved and the WSFO is required to obtain and maintain a detailed knowledge of the current and forecast FWA weather. Specialists should watch for and review subsequent forecasts, charts, and observations including radar and pilot reports in order to keep abreast of weather trends and developments.

**b.** Regardless of weather conditions, flight watch specialists shall continually solicit pilot reports regarding upper winds and temperature, wind shear, turbulence and icing. Such reports, if applicable, shall be included in all en route flight advisories. All aircraft contacted, preflight and inflight specialists, and the WSFO shall be notified immediately when pertinent conditions are reported that differ from the current forecast.

**c.** Flight watch specialists shall alert their associated WSFO immediately of the approach or occurrence of significant weather that is not included in the formal forecast.

**d.** Flight watch specialists shall actively solicit PIREP's and make proper dissemination.

**e.** Flight watch specialists are responsible for maintaining a mental picture of inflight conditions in their FWA and tailoring all available information for relay to specific flights.

**f.** Periods of heavy activity may require the services of more than one person on the flight watch position, particularly, an additional specialist to process, post, and disseminate weather information. Facility supervisors shall ensure that service to pilots is not derogated by the flight watch specialist being required to divert his attention to these important, but secondary duties. Completion of the En Route Flight Advisory Service training course is not required to perform these secondary functions.

### 4-142. OPERATING PROCEDURES AND PHRASEOLOGY

**a.** The primary purpose of EFAS is to enhance aviation safety by providing en route aircraft with timely and meaningful weather advisories.

**b.** Flight watch (FW) serves as a common collector for receiving and disseminating inflight weather reports. It is not to be used for flight plan filing, position reporting, or to provide a complete preflight weather briefing. En route flight advisories shall be tailored to the phase of flight that begins after climb out and ends with descent to land. Immediate destination weather and terminal forecast shall be provided upon request.

Pilots requesting information not within the scope of flight watch shall be advised of the appropriate FSS to contact.

**c.** Radio and interphone procedures contained in Chapter 4 shall be used in flight watch communications. Exceptions and additions are outlined in this Section and should be used only in providing En Route Flight Advisory Service.

**d.** Facilities shall identify themselves by using the name of the parent FSS and the words "Flight Watch" on all En Route Flight Advisory Service communications outlets, e.g., "CLEVELAND FLIGHT WATCH."

**e.** Request a pilot to change to another radio frequency for service other than flight watch by informing him of the facility to contact and the frequency to use.

**Examples. —**

"CESSNA 2327D HAWTHORNE FLIGHT WATCH CONTACT SAN DIEGO RADIO ON 122.5 TO FILE YOUR FLIGHT PLAN."

"PIPER 3918D OAKLAND FLIGHT WATCH CONTACT SACRAMENTO RADIO ON 122.3 TO CLOSE YOUR FLIGHT PLAN."

**f.** All En Route Flight Advisory Service communications outlets transmit and receive on the same (122.0 MHz) frequency; therefore, some frequency congestion may be expected. Since the transmitter at each outlet can be individually keyed, specialists shall key only the one transmitter necessary to contact the desired aircraft. Multiple transmitter keying shall be avoided to the extent possible.

**g.** Solicit pilot reports from a given area by contacting known aircraft in that area, or by broadcasting a request over the remote communications outlet serving the area.

**h.** Suggest route or destination changes to avoid areas of weather which, in the judgment of the specialist, constitute a threat to safe flight.

**i.** Use radar video displays in accordance with paragraph 4-3c.

**Example.—**

"BEECHCRAFT 2735D THUNDERSTORMS REPORTED ACROSS V15, V15S CLEAR OF THUNDERSTORMS."

"PIPER 9927P FOG HAS NOT DISSIPATED AS EXPECTED AT WASHINGTON NATIONAL AIRPORT. VISIBILITY 1 MILE, DULLES HAS IMPROVED RAPIDLY AND REPORTS 2300 BROKEN, VISIBILITY 7."

## 4-143. PROCESSING AND USE OF WEATHER DATA

Information received from pilots is an invaluable tool in flight planning and in assisting the National Weather Service (NWS). Therefore, it is important that such reports be disseminated to those having a need for them, both within the facility and to external offices. This shall be accomplished in the following manner:

**a.** PIREP's shall be given routine dissemination in accordance with Chapter 9, Section 2. Urgent PIREP's shall be called to the associated WSFO in addition to regular dissemination.

**b.** Each flight watch control station shall maintain a graphic display of pertinent PIREP's in its area.

**c.** National Weather Service requests for weather information from pilots in flight shall be honored as rapidly as operations permit.

## 4-144. NATIONAL FACSIMILE NETWORK

A separate drop on the National Facsimile Network is provided in each flight watch control station to assure that pertinent charts received via this system are readily available at the flight watch position.

**a.** The display should include, but not necessarily be limited to the following: analysis, prognosis, and data charts.

| | |
|---|---|
| Analysis | Surface |
| Analysis | Weather Depiction |
| Analysis | Radar Summary |
| Analysis LFM Charts | 850 mb; 700 mb; 500 mb; 300 mb; 200 mb |

Lifted Index—Precipitable water-freezing Level-Mean Relative Humidity

Prog-12-HR and 24-HR Surface and Precipitation, Low Level Significant Weather

Winds Aloft (all levels)

Prog-30-HR-Surface and 36-HR 1000-500mb thickness

Prog—Tropopause maximum wind/wind shear; high level significant weather

**b.** Preparation of charts shall conform with paragraph 3-3.

## 4-145. INTERRUPTIONS TO SERVICE

Notification of temporary outages shall be made in accordance with Handbook 7930.2, Notices to Airmen (NOTAMS).

## 4-146. EMERGENCIES

**a.** Emergency situations shall be handled in accordance with Chapter 5.

**b.** Although normal procedure is not to request the pilot to change frequencies without good reason, when working an aircraft in emergency over a remote outlet, flight watch specialists should bear in mind that the FSS specialist based at the remote location may be in a better position to assist the pilot. Circumstances and the apparent state of mind of the pilot should be given prime consideration prior to changing frequencies.

# Chapter 5. EMERGENCY SERVICES

## Section 1. GENERAL

### 5-1. EMERGENCY DETERMINATION

**a.** Because of the infinite variety of possible emergency situations, specific procedures cannot be prescribed. However, when you believe an emergency exists or is imminent, select and pursue a course of action which appears to be most appropriate under the circumstances, and which most nearly conforms to the instructions in this manual.

**b.** An emergency can be either a DISTRESS or URGENCY condition, as defined in the Pilot/Controller Glossary.

**c.** A pilot who encounters a DISTRESS condition should declare an emergency by beginning the initial communication with the word MAYDAY, preferably repeated three times. For an URGENCY condition the word PAN-PAN should be used in the same manner.

**d.** If the words MAYDAY or PAN-PAN are not used and you are in doubt that a situation constitutes an emergency or potential emergency, handle it as though it were an emergency.

**e.** Consider an aircraft emergency exists and inform the ARTCC, and DF net control if not the same, when:

(1) An emergency is declared by either:

(a) The pilot, or

(b) Facility personnel, or

(c) Officials responsible for the operation of the aircraft.

(2) Reports indicate that the aircraft's operating efficiency is so impaired that a forced landing may be/is necessary.

(3) Reports indicate the crew has abandoned the aircraft or is about to do so.

(4) Intercept or escort services are requested.

(5) The need for ground rescue appears likely.

(6) An Emergency Locator Transmitter (ELT) signal is heard or reported.

**Reference—** Paragraphs 5-2c and5-17h.

### 5-2. RESPONSIBILITY

**a.** If you are in communication with an aircraft in distress, handle the emergency and coordinate and direct the activities of assisting facilities. Transfer this responsibility to another facility only when you feel better handling of the emergency will result.

**b.** When you receive information about an aircraft in distress, forward detailed data to the ARTCC in whose area the emergency exists.

**Note. —** Notifying the ARTCC about a VFR aircraft emergency allows provision of IFR separation if considered necessary.

**c.** The ARTCC is responsible for consolidation of all pertinent ELT signal information. Forward all heard or reported ELT signals to the ARTCC.

### 5-3. OBTAINING INFORMATION

Obtain enough information to handle the emergency intelligently. Base your decision as to what type of assistance is needed on information and requests received from the pilot, because he is authorized by FAR 91 to determine a course of action.

### 5-4. COORDINATION

**a.** Request necessary assistance from other facilities as soon as possible, particularly if radar or DF service is available.

**b.** Coordinate efforts to the extent possible to assist any aircraft believed overdue. lost, or in emergency status.

### 5-5. PROVIDING ASSISTANCE

**a.** Provide maximum assistance to aircraft in distress. If the aircraft is transponder equipped and not on an IFR flight plan, request the pilot to squawk "MAYDAY" on Code 7700.

*Phraseology:*

"REQUEST YOU SQUAWK MAYDAY ON CODE 7700."

**b.** Enlist the service of available radar facilities and DF facilities operated by the FAA, the military, and the Federal Communications Commission, as well as their emergency services and facilities, when the pilot requests or when you deem necessary.

**Note 1.** — The National SAR Plan assigns search and rescue responsibilities as follows:

a. To the military agencies for conducting physical search and rescue operations.

b. To the FAA for:

1. Providing emergency service to aircraft in distress.

2. Assuring that SAR procedures will be initiated if an aircraft becomes overdue or unreported. This is accomplished through the ATC system for IFR aircraft and the flight plan program for VFR aircraft.

3. Attempting to locate overdue or unreported aircraft by INREQ and ALNOT communications search.

4. Cooperating in the physical search by making all possible facilities available for use of the searching agencies.

**Note 2.** — Flight service stations serve as the central point for collecting and disseminating information on an overdue or missing aircraft which is not on an IFR flight plan.

**Note 3.** — ARTCC's serve as the central points for collecting information, for coordinating with SAR, and for conducting a communications search by distributing any necessary ALNOTS's concerning:

a. Overdue or missing IFR aircraft.

b. IFR aircraft in an emergency situation occurring in their respective areas.

c. Aircraft on a combined VFR/IFR or an air-filed IFR flight plan and 30 minutes have passed since the pilot requested IFR clearance and neither communications nor radar contact can be established with it. For SAR purposes, these aircraft are treated the same as IFR aircraft.

d. Overdue or missing aircraft which have been authorized to operate in accordance with Special VFR clearance.

**Note 4.** — The ARTCC serves as the contact point for collecting information and coordinating with the Rescue Coordination Center (RCC) on all ELT signals.

## 5-6. RECORDING INFORMATION

Record all actions taken in the provision of emergency assistance.

## 5-7. thru 5-9. RESERVED

## Section 2. OPERATIONS

### 5-10. INFORMATION REQUIREMENTS

**a.** Start assistance as soon as enough information has been obtained upon which to act. Information requirements will vary, depending on the existing situation. Minimum required information for in-flight emergencies is:

**Note.** — In case of an ELT signal see paragraph 5-17.

1. Aircraft identification, type and transponder.
2. Nature of the emergency.
3. Pilot's desires.

**b.** After initiating action, obtain the following items or any other pertinent information from the pilot or aircraft operator, as necessary:

(1) Aircraft altitude.
(2) Fuel remaining in time.
(3) Pilot reported weather.
(4) Pilot capability for IFR flight.
(5) Time and place of last known position.
(6) Heading since last known position.
(7) Airspeed.
(8) Navigation equipment capability.
(9) NAVAID signals received.
(10) Visible landmarks.
(11) Aircraft color.
(12) Number of people on board.
(13) Point of departure and destination.
(14) Emergency equipment on board.

### 5-11. FREQUENCY CHANGES

Although 121.5 and 243.0 MHz are emergency frequencies, it might be best to keep the aircraft on the initial contact frequency. Change frequencies only when there is a valid reason.

### 5-12. AIRCRAFT ORIENTATION

Orient an aircraft by the means most appropriate to the circumstances. Recognized methods include:

**a.** Radar.

**b.** DF.

**c.** NAVAID's.

**d.** Pilotage.

**e.** Sighting by other aircraft.

### 5-13. ALTITUDE CHANGE FOR IMPROVED RECEPTION

When you consider it necessary and if weather and circumstances permit, recommend the aircraft maintain or increase altitude to improve communications, radar, or DF reception.

### 5-14. ALERTING ARTCC

When an aircraft is considered to be in emergency status, alert the ARTCC and forward the following information, as available:

**a.** Facility and person calling.

**b.** Flight plan, including color of aircraft, if known.

**c.** Time of last transmission received, by whom, and frequency used.

**d.** Last position report and how determined.

**e.** Action taken by reporting facility and proposed action.

**f.** Number of persons on board.

**g.** Fuel status.

**h.** Facility working aircraft and frequency.

**i.** Last known position, estimated present position, and maximum range of flight of the aircraft based on remaining fuel and airspeed.

**j.** Position of other aircraft near aircraft's route of flight when requested.

**k.** Whether or not an ELT signal has been heard or reported in the vicinity of the last known position.

**l.** Other pertinent information.

### 5-15. VFR AIRCRAFT IN WEATHER DIFFICULTY

If a VFR aircraft requests assistance when it encounters or is about to encounter IFR weather conditions, request the aircraft to contact the appropriate control facility. Inform that facility of the situation. If the aircraft is unable to communicate with the control facility, relay information and clearances.

### 5-16. AIRCRAFT POSITION PLOTS

Plot the flight path of the aircraft on a chart, including position reports, predicted positions, possible range of flight, and any other pertinent information. Solicit the assistance of other aircraft known to be operating near the aircraft in distress. Forward the information to the ARTCC.

### 5-17. EMERGENCY LOCATOR TRANSMITTER (ELT) SIGNALS

When an ELT signal is heard or reported:

**a.** Notify the ARTCC who will coordinate with the Rescue Coordination Center (RCC).

**b.** If the ELT signal report was received from an airborne aircraft, attempt to obtain the following information:

(1) Aircraft altitude.

(2) Where and when the signal first heard.

(3) Where and when maximum signal heard.

(4) Where and when signal faded or was lost. Solicit the assistance of other aircraft known to be operating in the signal area for the same information. Relay all information developed to the ARTCC.

**c.** Attempt to obtain fixes or bearings on the signal and forward any information obtained to the ARTCC.

**Note** — Fix information in relation to a VOR or VORTAC (radial distance) facilitates accurate ELT plotting by RCC and should be provided when possible.

**d.** In addition to the above, when the ELT signal strength indicates the transmitter may be on the airport or vicinity thereof, notify the onsite Airway Facilities personnel for their action.

**e.** Air Traffic personnel shall not leave their required duty stations to locate an ELT signal source.

**f.** Attempt to locate the signal source by checking all adjacent airports that can be reached by government circuits or local telephone not already checked by other ATC facilities for the following information:

(1) Can ELT signal be heard.

(2) Does signal strength indicate transmitter may be on airport.

(3) Can attempt be made to locate and silence transmitter.

(4) Advise the results of any action taken. Forward all information developed and action taken to the ARTCC.

**g.** Notify ARTCC if the signal source is located and whether or not it was a bona fide distress; plus any action taken or proposed for silencing the transmitter. Request person who located signals source to attempt to obtain ELT make, model, etc., for relay to RCC via the ARTCC.

**h.** Notify ARTCC if the signal terminates prior to location of the source.

**Note 1.** — The ARTCC serves as the contact point for collecting information and coordinating with the Rescue Coordination Center (RCC) on all ELT signals.

**Note 2.** — Operational ground testing of Emergency Locator Transmitters (ELT) has been authorized during the first 5 minutes of each hour. To avoid confusing the tests with an actual alarm, the testing is restricted to no more than three audio sweeps.

**Note 3.** — Portable hand carried receivers assigned to air traffic facilities (where no Airway Facilities personnel are available) may be loaned to responsible airport personnel or local authorities to assist in locating signal source.

### 5-18. EXPLOSIVE CARGO

When you receive information that an emergency landing will be made with explosive cargo aboard, inform the pilot of the safest or least congested airport areas. Relay the explosive cargo information to:

**a.** The emergency equipment crew.

**b.** The airport management.

**c.** The appropriate military agencies when requested by the pilot.

### 5-19. EXPLOSIVE DETECTION DOG HANDLER TEAMS

Take the following actions should you receive an aircraft request for the location of the nearest explosive detection K-9 team.

**a.** Obtain the aircraft identification and current position and advise the person in charge of the watch of the pilot request.

**b.** The facility will relay the pilot's request to the FAA Washington Communications Control Center, ADA-30, telephone (202) 863-5100, FTS 989-5100 or Autovon 851-1180 providing the aircraft's identification and position.

**c.** ADA-30 will provide the facility with the nearest location. The facility will have ADA-30 standby while the information is relayed to the pilot.

**d.** When you receive the nearest location of the explosive detection K-9 team, relay the information to the pilot.

**e.** If the aircraft wishes to divert to the airport location provided, obtain an estimated arrival time from the pilot and advise the person in charge of the watch. (Ref. 7210.3-208.)

**f.** After it has been determined that the aircraft wishes to divert to the airport location provided, the AT facility will ascertain estimated arrival time and advise ADA-30. ADA-30 will then notify the appropriate airport authority at the diversion airport. In the event the K-9 team is not available at this airport, ADA-30 will relay this information to the AT facility providing them with the secondary location. ATC will then relay this to pilot concerned for appropriate action.

### 5-20. IN-FLIGHT EQUIPMENT MALFUNCTIONS

When a pilot reports an in-flight equipment malfunction, take the following action:

**a.** Request the nature and extent of any special handling desired.

**Note.** — FAR 91 requires aircraft to report to ATC any loss of VOR, TACAN, ADF, or low frequency navigation receiver capability, complete or partial loss of ILS receiver capability, or impairment of air-ground communications capability. This includes the degree to which the capability of the aircraft to operate IFR in the air traffic control system is impaired and the nature and extent of any assistance desired from air traffic control.

**b.** Provide the maximum assistance possible consistent with equipment, workload, and any special handling requested.

**c.** Relay to other specialists or facilities who will subsequently handle the aircraft and any special handling required or being provided.

### 5-21. NAVY FLEET SUPPORT MISSIONS

Handle Navy Fleet Support Missions aircraft as follows:

**a.** When you receive information concerning an emergency to a U.S. Navy "Special Flight Number" aircraft inform the nearest ARTCC of all pertinent information.

**b.** Relay the words "Special Flight Number" followed by the number given as part of the routine IFR flight information.

### 5-22. "DUTCH" AND "ASPEN" AIRCRAFT

If an aircraft (USAF F-12 or SR-71) using the call sign "Dutch" or "Aspen" reports inflight difficulty or declares an emergency, in addition to normal emergency handling of the aircraft, take the following action:

**a.** Forward the report verbatim to the associated ARTCC.

**b.** Comply with all requests from the pilot or the ARTCC.

**c.** Contact the ARTCC area manager if there is any question regarding action to be taken.

**d.** Do not discuss actions taken in regard to these aircraft with other than authorized personnel.

### 5-23. SPECIAL INTEREST FLIGHTS—EMERGENCY OR UNSCHEDULED LANDINGS

**a.** If an aircraft of a communist controlled country makes an emergency or unscheduled landing in the United States, immediately alert your supervisor, the nearest U.S. Customs Service Office and the appropriate ARTCC. Supply the following information, if available:

(1) Type of aircraft.

(2) Country of aircraft registry.

(3) Destination airport.

(4) Nature of emergency or reason for landing, as appropriate.

**Note.** — Communist controlled countries include Albania, Bulgaria, Peoples Republic of China, Cuba, Czechoslovakia, East Germany, Hungary, North Korea, Outer Mongolia, Poland, Romania, Union of Soviet Socialist Republics and Socialist Republic of Vietnam.

**b.** Advise the pilot that passengers must remain aboard the aircraft after landing until cleared by the U.S. Customs Service.

**c.** In cases where communication is established with the aircraft but the aircraft identification cannot be immediately correlated with a known flight plan, notify the appropriate ARTCC and nearest U.S. Customs Service Office at once.

### 5-24. MINIMUM FUEL—USAF/USN/FAA JET AIRCRAFT

If a USAF, FAA, or USN jet aircraft declares a state of "minimum fuel," inform the appropriate control facility of the minimum fuel problem.

**Note.** — Use of the term "minimum fuel" indicates recognition by a pilot that his fuel supply has reached a state where, upon reaching destination, he cannot accept any undue delay. This is not an emergency situation but merely an advisory that indicates an emergency situation is possible should any undue delay occur. Common sense and good judgment will determine the extent of special handling to be given in such situations.

### 5-25. AIRCRAFT BOMB THREATS

**a.** When information is received from any source that a bomb has been placed on, in, or near an aircraft for the purpose of damaging or destroying such aircraft, notify your supervisor or facility manager. If the threat is general in nature, handle it as a "Suspicious Activity." When the threat is targeted against a specific aircraft and you are in contact with the suspect aircraft, take the following actions as appropriate:

**Note 1.** — Facility supervisors are expected to notify the appropriate offices, agencies, operators/air carriers according to applicable plans, directives and Handbook 7210.3 or applicable military directives.

**Note 2.** — "Suspicious Activity" is covered in Handbook 7210.3. Military facilities would report a "general" threat through the chain of command or according to service directives.

**Note 3.** — A "specific" threat may be directed at an aircraft registry or tail number, the air carrier flight number, the name of an operator, crew member or passenger, the departure/arrival point or times, or combinations thereof.

1. Advise the pilot of the threat.

2. Inform the pilot that technical assistance can be obtained from an FAA Aviation Explosives Expert.

**Note.** — An FAA Aviation Explosives Expert is on call at all times and may be contacted by calling the FAA Communications Control Center, Washington, DC, Area Code 202 863-5100, FTS 989-5100 or Autovon 851-1180. Technical advice can be relayed to assist civil or military air crews in their search for a bomb and in determining what precautionary action to take if one is found.

3. Ask the pilot if he desires to climb or descend to an altitude that would equalize or reduce the outside air pressure/existing cabin air pressure differential. Obtain and relay an appropriate clearance considering MEA, MOCA, MRA and weather.

**Note.** — Equalizing existing cabin air pressure with outside air pressure is a key step which the pilot may wish to take to minimize the damage potential of a bomb.

4. Handle the aircraft as an emergency and/or provide the most expeditious handling possible with respect to the safety of other aircraft, ground facilities, and personnel.

**Note.** — Emergency handling is discretionary and should be based on the situation. With certain types of threats, plans may call for a low-key action or response.

5. Obtain and relay clearance to a new destination if requested.

6. When a pilot requests technical assistance or if it is apparent that a pilot may need such assistance, do NOT suggest what actions the pilot should take concerning a bomb, but obtain the following information and notify your supervisor who will contact the FAA Aviation Explosives Expert.

**Note.** — This information is needed by the FAA Aviation Explosives Expert so that he can assess the situation and make immediate recommendations to the pilot. The Aviation Explosives Expert may not be familiar with all military aircraft configurations but he can offer technical assistance which would be beneficial to the pilot.

(a) Type, series and model of the aircraft.

(b) Precise location/description of the bomb device if known.

(c) Other details which may be pertinent.

**Note.** — The following details may be of significance if known but it is not intended that the pilot should disturb a suspected bomb/bomb container to ascertain the information: The altitude or time set for the bomb to explode, type of detonating action (barometric, time, antihandling, remote radio transmitter), power source (battery, electrical, mechanical), type of initiator (blasting cap, flash bulb, chemical) and the type of explosive/incendiary charge (dynamite, black powder, chemical).

**b.** When a bomb threat involves an aircraft on the ground and you are in contact with the suspect aircraft, take the following actions in addition to those discussed in the preceding paragraphs which may be appropriate:

1. If the aircraft is at an airport where tower control or FSS advisory service is not available, or if the pilot ignores the threat at any airport, recommend that take-off be delayed until the pilot or aircraft operator establishes that a bomb is not aboard in accordance with FAR, Part 121. If the pilot insists on taking off and in your opinion the operation will not adversely affect other traffic, issue or relay an ATC clearance.

**Reference.** — FAR 121.537.

2. Advise the aircraft to remain as far away from other aircraft and facilities as possible, to clear the runway if appropriate and to taxi to an isolated or designated search area. When it is impractical or if the pilot takes an alternative action (e.g., parking and off loading immediately), advise other aircraft to remain clear of the suspect aircraft by at least 100 yards if able.

**Note.** — Passenger deplaning may be of paramount importance and must be considered before the aircraft is parked or moved away from the service areas. The decision to use ramp facilities rests with the pilot, aircraft operator and/or airport manager.

**c.** If you are unable to inform the suspect aircraft of a bomb threat or if you lose contact with the aircraft, advise your supervisor and relay pertinent details to other sectors or facilities as deemed necessary.

**d.** When a pilot reports the discovery of a bomb or suspected bomb on a aircraft which is airborne or on the ground, determine the pilot's intentions and comply with his requests insofar as possible. Take all the actions discussed in the preceding paragraphs which may be appropriate under the existing circumstances.

**e.** The handling of aircraft when a hijacker has or is suspected of having a bomb requires special considerations. Be responsive to the pilot's requests and notify supervisory personnel. Apply hijacking procedures and offer assistance to the pilot according to the preceding paragraphs if needed.

### 5-26. SECURITY CONTROL OF AIR TRAFFIC AND NAVIGATION AIDS (SCATANA)

**a.** The SCATANA Plan outlines responsibilities, procedures, and instructions for the security control of civil and military air traffic and NAVAID's under various emergency conditions.

**b.** When notified of SCATANA implementation follow the instructions of FAA Form 7610-1 and any additional instructions received from the ARTCC.

(1) To ensure that SCATANA actions can be taken expeditiously, periodic SCATANA tests will be conducted in connection with NORAD exercises. Tests may be local, regional, or national in scope.

(2) FSS facilities will participate in tests except where such participation will involve the safety of aircraft.

(3) During SCATANA tests all actions will be simulated.

**Reference—** Handbook 7610.4.

## 5-27. thru 5-29. RESERVED

## Section 3. DIRECTION FINDER (DF) SERVICE

### 5-30. ACTIONS REQUIRED

When providing DF services to an aircraft in emergency status:

**a.** Determine if the aircraft is in VFR or IFR weather conditions, fuel remaining, altitude, and heading.

**b.** If the aircraft is operating in IFR weather conditions, inform the pilot of the minimum safe altitude and coordinate with the appropriate control facility.

**c.** Determine if aircraft is on a flight plan. If the aircraft is not on an IFR flight plan and is in VFR weather conditions, advise the pilot to remain VFR.

**d.** Alert DF net whenever the following conditions exist even though the aircraft is radar identified:

(1) The pilot is lost.

(2) An emergency is declared.

**Note.** — It is not necessary to alert the DF net if a terminal controller visually sights aircraft.

### 5-31. DF FIXING BY NET

When a DF net is in operation, determine aircraft position as follows:

**a.** Tell the pilot to transmit for 10 seconds.

**b.** Plot the bearings obtained from two or more stations. Inform the aircraft of its position as of the time the bearings were plotted.

**Note.** — The center or DF station designated as net control is responsible for evaluating and plotting bearings received from individual stations.

### 5-32. DF FIXING BY ONE FACILITY

One DF facility can determine an aircraft's position by:

**a.** Plotting bearings from a reported VOR radial and an observed DF bearing.

**b.** Time method:

(1) Determine the aircraft's heading and DF bearing.

(2) Tell the aircraft to turn left or right, whichever requires the lesser amount of turn, to a heading perpendicular to the DF bearing.

(3) After turn is completed, tell the aircraft to transmit (normally 10 seconds). Observe DF bearing.

(4) One minute later, request another transmission. Determine bearing and turn aircraft toward DF site.

(5) Divide the difference in bearings (steps 3 and 4) into 60. The result is the number of minutes the aircraft is from the DF site.

**Note.** — One station DF fixing is based on zero winds.

**Example.** — Original bearing of 360 and aircraft heading of 200, the aircraft should be advised to turn right to a heading of 270. Observe bearing, wait 1 minute, and observe bearing. If the first bearing (after completion of turn) was 337 and the second bearing was 325, a difference of 12, the aircraft is 5 minutes from the DF site.

**c.** Distance method:

(1) Use the procedures specified in steps (1) through (4) in **b.** above. Request aircraft's true airspeed.

(2) Compute the distance by dividing the bearing change (for 1 minute) into the TAS figure.

**Example.** — 140 (TAS)÷10 (bearing change for 1 minute)=14 miles from DF site.

### 5-33. VFR DF SERVICE

**a.** Provide DF service to VFR aircraft when either of the following conditions exist:

(1) The pilot requests the service.

(2) You suggest the service and the pilot concurs.

**b.** After determining an aircraft's bearing, provide DF service by specifying direction of turn and magnetic heading to be flown after completion of turn.

**c.** Issue the following information to the aircraft:

(1) Altimeter setting.

(2) Pertinent information on known field conditions and latest weather information at the destination airport.

**d.** Request the aircraft's heading and altitude.

*Phraseology:*

WHAT IS YOUR HEADING AND ALTITUDE?

**e.** While receiving the reply, determine the bearing; then inform the aircraft of the following:

(1) Direction of turn.

(2) Heading, spoken in 3 digits (Do not state the words "degrees").

(3) Nature of service.

(4) Necessity to remain VFR.

(5) Microphone technique.

(6) Request for report when airport is in sight.

*Phraseology:*

TURN LEFT/RIGHT HEADING (degrees) FOR DF GUIDANCE TO (name of airport, fix, or location). MAINTAIN VFR AT ALL TIMES. WHEN A REQUEST FOR TRANSMISSION IS RECEIVED PRESS YOUR MICROPHONE BUTTON FOR THE SPECIFIED NUMBER OF SECONDS (and if appropriate) REPORT (name) AIRPORT IN SIGHT.

**f.** Request the aircraft to transmit for specified periods, as required. The frequency of these requests will vary depending on such factors as wind, frequency congestion, and distance, but should be made at least once each minute until aircraft reports airport in sight or service is terminated.

*Phraseology:*

TRANSMIT (number-normally 10) SECONDS. TURN LEFT/RIGHT, HEADING (degrees) or CONTINUE HEADING (degrees).

**g.** Inform aircraft when DF service is terminated.

*Phraseology:*

DF ORIENTATION SERVICE TERMINATED

**Note.** — Service may be terminated when airport is in sight, the desired fix or location is reached, practice steers or approaches are discontinued etc.

## 5-34. EMERGENCY DF APPROACH PROCEDURE

**a.** Under emergency conditions where a standard instrument approach cannot be executed, provide DF guidance and instrument approach service as follows:

(1) Obtain and relay ATC clearance including radio failure procedures.

(2) Issue destination airport weather.

(3) Provide guidance as specified in paragraph 5-33e, except delete the VFR requirement. To avoid large turns over the DF site, aircraft should be guided to pass over the DF site established on the course that it will maintain on the outbound leg of the approach.

*Phraseology:*

TURN LEFT/RIGHT, HEADING (degrees) FOR DF GUIDANCE AND APPROACH TO THE (name) AIRPORT. MAINTAIN (altitude specified by ATC). WHEN A REQUEST FOR TRANSMISSION IS RECEIVED, PRESS YOUR MICROPHONE BUTTON FOR THE SPECIFIED NUMBER OF SECONDS. REPORT AIRPORT IN SIGHT. IF NO TRANSMISSION IS RECEIVED FOR (time of interval) PROCEED VFR. IF UNABLE, PROCEED (routing, fix, altitude as specified by ATC). CONTACT (facility) ON (frequency).

**b.** Inform the pilot when the aircraft is over the DF site, advise pilot to perform landing check, and provide guidance for outbound track.

*Phraseology:*

OVER DF SITE, PERFORM LANDING CHECK, CONTINUE HEADING (degrees) or TURN LEFT/RIGHT, HEADING (degrees).

**c.** Provide DF approach guidance in accordance with the triangle or teardrop approach procedures as specified on FAA Form 8260-6.

(1) Triangle Approach Pattern.

(a) Time the outbound leg and issue descent information. Normally, the outbound track should be maintained for 3 minutes but this may be adjusted, depending on airspeed and nature of the emergency. Time intervals between bearing observations should not exceed 15 seconds.

*Phraseology:*

ON OUTBOUND LEG. DESCEND AND MAINTAIN (altitude specified on FAA Form 8260-6 for outbound course).

(b) When outbound leg is completed, issue turn instructions so that the aircraft's course is perpendicular to the final approach course. Issue further descent information, if so specified on FAA Form 8260-6. Issue missed approach procedures as specified on FAA Form 8260-6.

*Phraseology:*

ON BASE LEG. IN CASE OF MISSED APPROACH CLIMB TO (altitude) ON COURSE (degrees) WITHIN (number) MILES.

(c) At least two turns should be made onto final approach.

(d) When aircraft is on final approach, advise it to start descent and provide minimum descent altitude and field elevation information. Take bearings more frequently. Time intervals between bearing observations should not exceed 5 seconds during the estimated last 30 seconds of the approach.

*Phraseology:*

ON FINAL APPROACH, BEGIN DESCENT, MINIMUM DESCENT ALTITUDE (number of feet). FIELD ELEVATION (number of feet).

(e) If the aircraft misses approach inform the appropriate control facility.

(2) Teardrop Approach Pattern.

(a) Provide guidance to establish the aircraft on the outbound course. Issue descent information, if appropriate. Time intervals between bearing observations should not exceed 15 seconds.

(b) Issue direction of turn and inbound heading information. Issue missed approach procedures as specified on FAA Form 8260-6.

(c) When procedure turn is complete, provide directional guidance and issue descent information. Time intervals between bearing observations should not exceed 5 seconds during the estimated last 30 seconds of the approach.

(d) If aircraft misses approach inform the appropriate control facility.

### 5-35. thru 5-39. RESERVED

## Section 4. VOR/ADF ORIENTATION

### 5-40. ACTIONS REQUIRED

When providing VOR/ADF orientation services to an aircraft in emergency status:

**a.** Determine if aircraft is in VFR or IFR weather conditions, fuel remaining, altitude, and heading.

**b.** If the aircraft is operating in IFR weather conditions, inform the pilot of the minimum safe altitude and coordinate with the appropriate control facility.

**c.** Determine if aircraft is on a flight plan. If the aircraft is not on an IFR flight plan and is in VFR weather conditions, advise the pilot to remain VFR.

**d.** Alert DF net whenever the following conditions exist even though the aircraft is radar identified:

(1) The pilot is lost.

(2) An emergency is declared.

**Note—** It is not necessary to alert the DF net if a terminal controller visually sights the aircraft.

### 5-41. ADF ORIENTATION/ADF CROSSFIX

When using ADF orientation and/or crossfix procedures, determine aircraft position as follows:

**a.** POSITION FIXING

(1) Advise aircraft to remain VFR, maintain straight and level flight, and to align directional gyro with magnetic compass. Provide local altimeter setting. Determine weather conditions aircraft is encountering and available fuel.

*Phraseology:*

"MAINTAIN VFR AT ALL TIMES. ADVISE IF ALTITUDE OR HEADING CHANGE IS NECESSARY TO REMAIN VFR. (location) ALTIMETER (reading). MAINTAIN STRAIGHT AND LEVEL FLIGHT. RESET YOUR HEADING INDICATOR TO AGREE WITH YOUR MAGNETIC COMPASS. AFTER YOU HAVE DONE THIS SAY YOUR HEADING AND ALTITUDE."

(2) Advise aircraft to maintain the same heading, verify aircraft has ADF equipment, and determine airspeed.

*Phraseology:*

"CONTINUE HEADING (degrees). WHAT TYPE OF NAVIGATIONAL EQUIPMENT DO YOU HAVE ON BOARD AND WHAT IS YOUR AIRSPEED?"

(3) Determine weather and fuel conditions.

*Phraseology:*

"WHAT IS THE WEATHER AT YOUR ALTITUDE AND FUEL REMAINING IN TIME?"

(4) Advise aircraft to tune ADF receiver to the NDB. Provide the NAVAID name, identifier, and frequency.

*Phraseology:*

"TUNE YOUR ADF RECEIVER TO THE (name) NDB, (frequency), (identification). ADVISE WHEN YOU HAVE DONE THIS."

(5) After acknowledgment has been received, advise aircraft to set ADF function switch to ADF position and report the reading.

*Phraseology:*

"TURN THE FUNCTION SWITCH TO THE ADF POSITION. WHEN THE NEEDLE STABILIZES ADVISE THE ADF NEEDLE READING."

(6) Compute the magnetic bearing.

**Note—** RB +MH =MB

(7) Advise aircraft of its direction from the NAVAID.

*Phraseology:*

"YOU ARE (direction) OF THE (name) RADIO BEACON."

**b.** ORIENTATION

(1) Turn aircraft inbound to the NDB being used. Provide direction of turn and heading to be flown. Advise pilot to report when established on that heading.

*Phraseology:*

"FOR ADF ORIENTATION TURN (left/right) HEADING (degrees). REPORT ESTABLISHED HEADING (degrees)."

(2) Notify ARTCC. Provide all required information including aircraft position and heading.

(3) Verify that aircraft is established on a line of position to the NDB.

*Phraseology:*

"WHAT IS YOUR ADF NEEDLE READING?"

(4) Provide heading adjustments as needed for aircraft to continue inbound to the NDB.

(a) If aircraft report indicates an ADF reading other than "0", compute new heading and advise aircraft.

*Phraseology:*

"TURN (direction) HEADING (degrees). REPORT ESTABLISHED HEADING (degrees)."

(b) After pilot reports established and needle is on "0", heading adjustments are not necessary.

*Phraseology:*

"CONTINUE HEADING (degrees)".

c.CROSSFIXING

After the aircraft is established inbound to the NAVAID use the following procedures:

(1) Advise aircraft to tune ADF receiver to the NDB to be used for crossfixing. Provide the NAVAID name, identifier, and frequency.

*Phraseology:*

"TUNE YOUR ADF RECEIVER TO THE (name) RADIO BEACON, (frequency) (identification). ADVISE WHEN YOU HAVE DONE THIS."

(2) After acknowledgment has been received, request ADF reading.

*Phraseology:*

"TURN THE FUNCTION SWITCH TO THE ADF POSITION, WHEN THE NEEDLE STABILIZES, ADVISE THE ADF NEEDLE READING."

(3) Compute and plot the second line of position.

**Note**— The intersection of the two lines of position is the aircraft position at the time of the second ADF reading.

(4). Advise the aircraft of its position.

*Phraseology:*

"YOUR POSITION IS (distance) (direction) OF THE (name) RADIO BEACON."

(5) Request pilot's intentions.

*Phraseology:*

"WHAT ARE YOUR INTENTIONS?"

### 5-42. VOR ORIENTATION

When using VOR orientation and/or crossfix procedures, determine aircraft position as follows:

a. POSITION FIXING

(1) Advise aircraft to remain VFR, maintain straight and level flight, and to align directional gyro with magnetic compass. Provide local altimeter setting.

*Phraseology:*

"MAINTAIN VFR AT ALL TIMES. ADVISE IF ALTITUDE OR HEADING CHANGE IS NECESSARY TO REMAIN VFR. (location) ALTIMETER (reading). MAINTAIN STRAIGHT AND LEVEL FLIGHT. RESET YOUR HEADING INDICATOR TO AGREE WITH YOUR MAGNETIC COMPASS. AFTER YOU HAVE DONE THIS SAY YOUR HEADING AND ALTITUDE."

(2) Advise aircraft to maintain the same heading, verify aircraft has VOR equipment, and determine airspeed.

*Phraseology:*

"CONTINUE HEADING (degrees). WHAT TYPE OF NAVIGATIONAL EQUIPMENT DO YOU HAVE ON BOARD AND WHAT IS YOUR AIRSPEED?"

(3) Determine weather conditions and fuel status.

*Phraseology:*

"WHAT IS THE WEATHER AT YOUR ALTITUDE AND FUEL REMAINING IN TIME?"

(4) Advise aircraft to tune receiver to the VOR you have selected. Provide VOR name, frequency, and lost communication procedures.

*Phraseology:*

MAIN TRANSMITTING THIS FREQUENCY. TUNE YOUR RECEIVER TO THE (name) VOR (frequency), CHECK VOLUME UP. IF COMMUNICATION IS NOT ESTABLISHED IMMEDIATELY, RETURN TO THIS FREQUENCY."

(5) Using only the voice feature of the VOR, establish positive communication with the aircraft.

*Phraseology:*

"(name) RADIO TRANSMITTING ON THE (name) VOR, HOW DO YOU HEAR? OVER."

(6) Determine aircraft course selector reading.

*Phraseology:*

"ROTATE YOUR COURSE SELECTOR SLOWLY UNTIL THE LEFT/RIGHT NEEDLE CENTERS WITH A "TO" INDICATION; THEN ADVISE YOUR COURSE SELECTOR READING."

(7) Advise the aircraft of its position.

*Phraseology:*

"YOUR POSITION IS (direction) OF THE (name) VOR."

b. ORIENTATION

(1) Turn aircraft inbound to the VOR being used. Provide direction of turn and heading to be flown. Advise pilot to report when established on that heading.

*Phraseology:*

"FOR VOR ORIENTATION TURN (left/right) HEADING (degrees); REPORT ESTABLISHED HEADING (degrees)."

(2) Notify ARTCC. Provide all required information including aircraft position and heading.

(3) Verify that aircraft is established on a line of position to the VOR.

*Phraseology:*

"WHAT IS THE POSITION OF YOUR LEFT/RIGHT NEEDLE?"

(4) Provide heading adjustments as needed for aircraft to continue inbound to the VOR.

(a) When aircraft report indicates the left/right needle is not centered, advise aircraft to recenter needle with a "TO" indication and report the course selector reading.

*Phraseology:*

"WHAT IS THE POSITION OF YOUR LEFT/RIGHT NEEDLE?" (aircraft response indicates not centered.) "AGAIN, ROTATE YOUR COURSE SELECTOR SLOWLY UNTIL THE LEFT/RIGHT NEEDLE CENTERS WITH A "TO" INDICATION AND ADVISE YOUR COURSE SELECTOR READING. TURN (direction) HEADING (degrees); REPORT ESTABLISHED HEADING (degrees)."

(b) After aircraft is established on inbound radial, advise aircraft to continue on inbound heading.

*Phraseology:*

"CONTINUE HEADING (degrees)."

(5) Plot line of position.

**c.** CROSSFIXING

After the aircraft is established inbound to the VOR use the following procedures:

(1) Advise aircraft to tune receiver to the VOR you have selected for crossfixing. Provide VOR name, frequency, and lost communications procedures.

*Phraseology:*

"REMAIN TRANSMITTING THIS FREQUENCY. TUNE YOUR RECEIVER TO THE (name) VOR (frequency), CHECK VOLUME UP. IF COMMUNICATION IS NOT ESTABLISHED IMMEDIATELY, RETURN TO THIS FREQUENCY."

(2) Using only the voice feature of the (second) VOR, establish positive communication with the aircraft.

*Phraseology:*

"(name) RADIO TRANSMITTING ON THE (name) VOR, HOW DO YOU HEAR? OVER."

**Note—** Transmit only on the frequency of the VOR being used for crossfixing.

(3) After communication has been reestablished, advise the aircraft to recenter the VOR left/right needle and advise the reading.

*Phraseology:*

"ROTATE YOUR COURSE SELECTOR SLOWLY UNTIL THE LEFT/RIGHT NEEDLE CENTERS AND THEN ADVISE YOUR COURSE SELECTOR READING."

(4) Advise aircraft to continue inbound heading.

*Phraseology:*

"CONTINUE HEADING (degrees)."

(5) Plot new line of position from (second) VOR, advise aircraft of its position.

*Phraseology:*

"YOUR POSITION IS (miles) (direction) OF THE (name) VOR".

**Note—** The intersection of the two lines of position is the aircraft position at the time of the second VOR reading.

(6) Request aircraft intentions.

*Phraseology:*

"WHAT ARE YOUR INTENTIONS?"

## 5-43. GUIDANCE TO AIRPORT

After establishing aircraft position and if pilot requests guidance to airport:

**a.** Plot course to the airport.

**b.** Provide course guidance information to aircraft.

(1) Advise aircraft of direction of turn and heading to the airport.

*Phraseology:*

"FOR A HEADING TO THE (name) AIRPORT, TURN (direction) HEADING (degrees) REPORT ESTABLISHED HEADING (degrees)."

(2) After aircraft reports established on heading to airport, advise aircraft of its position in relation to the airport.

*Phraseology:*

"YOU ARE (miles) (direction) OF THE (name) AIRPORT. CONTINUE HEADING (degrees)."

(3) Continue to provide assistance in the form of pilotage and airport information as necessary.

*Phraseology:*

"DO YOU SEE ANY PROMINENT LANDMARKS?"

"ARE YOU FAMILIAR WITH THE (name) AIRPORT?"

"(Name) AIRPORT FIELD ELEVATION (feet). IT HAS (number and surface type) RUNWAYS. THE RUNWAY(S) RUN (direction). THE AIRPORT IS LOCATED (direction/distance) FROM (landmark visible to aircraft). UNICOM (and/or tower) FREQUENCY (frequency)."

(4) Advise aircraft to report landing airport in sight.

*Phraseology:*

"REPORT AIRPORT IN SIGHT."

(5) Determine when aircraft no longer needs assistance.

*Phraseology:*

"DO YOU REQUIRE FURTHER ASSISTANCE?"

(6) When aircraft indicates assistance is no longer required, terminate service. Provide tower or unicom frequency and local altimeter setting.

*Phraseology:*

"(VOR/ADF) ORIENTATION SERVICE TERMINATED. UNICOM (and/or tower) FREQUENCY (frequency). ALTIMETER (reading)."

(7) Notify ARTCC of aircraft position, termination of services and pilot's intentions.

# Chapter 6. FLIGHT DATA

## Section 1. GENERAL

### 6-1. FLIGHT PLANS

Recommend the filing of flight plans, particularly when lake, island, mountain, or ocean reporting service is available. Brief pilots, as appropriate, on the following:

**a.** Identify the tie-in FSS for the departure point and advise the pilot to report departure time directly to that facility. When a departure report is unlikely because of inadequate communications capability, advise the pilot that the flight plan will be activated at the proposed time unless an amended time or cancellation is received prior to ETD.

**b.** If the destination airport is not served by a station, determine with whom the pilot will cancel.

**c.** Recommend that a separate flight plan be filed for each leg of a VFR flight when the duration of a stopover is expected to exceed 1 (one) hour.

**d.** Request the pilot to inform an FSS when a 30-minute change in the filed time en route occurs.

**e.** On return flights from remote areas, e.g., a fishing site, establish a mutually acceptable date/time with the pilot for alerting search and rescue.

**f.** On a combined IFR/VFR flight, confirm with the pilot whether the latter portion is by flight plan or not.

**g.** On a combined VFR/IFR flight, confirm whether the first portion is by flight plan and, if so, with whom the pilot will cancel.

**h.** If a pilot indicates the flight will penetrate positive control airspace, advise the pilot of the PCA requirements.

**Reference.**— Paragraph 4-22

**i.** When a pilot files to an airport served by a part-time FSS and the ETA is during the period the facility is closed, ask the pilot to close with the associated FSS, identified in the Location Identifier Handbook and Airport/Facility Directory.

**Reference.**— Paragraph **6-28.**

**j.** Upon request, inform pilots filing IFR flight plans of the appropriate and most effective means of obtaining IFR departure clearances from non-tower, non-FSS, and outlying airports.

### 6-2. FLIGHT PLAN DATA

Handle flight plan data as follows:

**a.** Record flight plans on FAA Form 7233-1.

**Note.** —FAA Form 7233-3 should also be used until stock is depleted.

**b.** Record on Form 7233-1 or a flight progress strip the flight plan data received from an operations office. The operations office must obtain complete information on the flight, but need forward to the FAA only those items necessary for control or VFR flight plan purposes.

**c.** Pass the Form 7233-1 to the appropriate operating position for delivery of the flight notification message.

### 6-3. FAA FORM 7233-1

Record flight plans on FAA Form 7233-1. Completion of all blocks is not required in every case, and all items filed are not always transmitted. Use authorized abbreviations where possible. Fill in the form as follows:

**a.** *Item 1. Type of Flight Plan:*

Check the appropriate box

**b.** *Item 2. Aircraft Identification*: Enter as follows:

(1) *Civil Aircraft*—Use letter-number registration number. Prefix the letter "T" for air taxis, letter "L" for lifeguard or 2- or 3- letter aircraft company designator specified in the Contractions handbook, followed by trip or flight number.

**Examples. —**

"N12345"
"LN751B"
"TN5552Q"
"AA192"

(2) *U.S. Military Aircraft*—Use the military abbreviation followed by the last 5 digits of the aircraft number For certain tactical mission aircraft enter the assigned 3 to 6 letter code word, followed by a 1 to 4 digit number.

| Abbreviation | Military Service |
|---|---|
| A | USAF |
| C | Coast Guard |
| E | Air Evacuation |
| G | Air/Army National Guard |
| L | LOGAIR (USAF contract) |
| VM | Marine Corps |
| R | Army |
| S | Special Air Mission |
| M | MAC (Military Airlift Command) |
| VV | Navy |

(3) *Canadian Military Aircraft*—The abbreviations below shall be followed by a number group not to exceed four digits.

| Abbreviation | Military Service |
|---|---|
| CAM | Transport Command |
| CTG | Canadian Coast Guard |
| CAF | Canadian Armed Force |

**c.** *Item 3. Aircraft Type/Special Equipment*—Insert the name or abbreviation, as listed in the Contractions handbook, of the manufacturer's or military designation. If a formation flight is planned, enter the number and type of aircraft: e.g., "8/B47."

(1) *Prefix to Aircraft Type*—Indicate, for both VFR and IFR operations, the aircraft's weight class if it is a heavy, by adding the prefix H to the aircraft type: e.g., H/DC10.

(2) *Suffix to Aircraft Type*—Indicate, for both VFR and IFR operations, the aircraft's radar transponder, DME, or RNAV capability, by adding the appropriate symbol, preceded by a slant as follows:

| | |
|---|---|
| /X | No transponder. |
| /T | Transponder with no altitude encoding capability. |
| /U | Transponder with altitude encoding capability. |
| /D | DME, no transponder. |
| /B | DME, transponder with no altitude encoding capability. |
| /A | DME, transponder with altitude encoding capability. |
| /M | TACAN-only, no transponder. |
| /N | TACAN-only, transponder with no altitude encoding capability. |
| /P | TACAN-only, transponder with altitude encoding capability. |
| /C | RNAV, transponder with no altitude encoding capability. |
| /R | RNAV, transponder with altitude encoding capability. |
| /W | RNAV and no transponder. |

**d.** *Item 4. True Airspeed (TAS Knots):* Enter two to four digits.

**e.** *Item 5. Departure Point:* Enter name or identifier of the departure airport or point over which the flight plan is activated.

**f.** *Item 6. Departure Time:*—Self-explanatory.

**g.** *Item 7. Cruising Altitude:* Proposed altitude or flight level; e.g., "175" or "180."

**h.** *Item 8. Route of Flight:* Enter abbreviated names of airways or jet routes to clearly indicate the proposed flight path. For direct flight use names or identifiers of navigation aids and geographical points or coordinates. If more than one airway or jet route is to be flown, clearly indicate the transition points.

**i.** *Item 9. Destination:* Enter name or abbreviation of airport or position where the flight will terminate.

**j.** *Item 10. Estimated Time En Route:* Enter in hours and minutes the total elapsed time between departure and destination; e.g., 0430.

**k.** *Item 11. Remarks:* Information necessary for ATC purposes or to assist search operations, plus any other data appropriate to the flight, e.g., the abbreviations "FAA" or "DOT."

**Note.**— Civil aircraft with authorized company identifications are required to file the full authorized radio call in remarks.

**l.** *Item 12. Fuel on Board:* Enter in hours and minutes.

**m.** *Item 13. Alternate Airport(s):* Enter the name or abbreviation if specified by the pilot.

**n.** *Item 14. Pilot's Name, Address, Telephone Number and Aircraft Home Base:* Self-Explanatory.

**o.** *Item 15. Number Aboard:* Self-Explanatory.

**p.** *Item 16. Color of Aircraft:*

| | | | |
|---|---|---|---|
| A | Amber | O | Orange |
| BE | Beige | P | Purple |
| B | Blue | R | Red |
| BK | Black | S | Silver |
| BR | Brown | T | Tan |
| G | Green | TQ | Turquoise |
| GD | Gold | V | Violet |
| GY | Gray | W | White |
| M | Maroon | Y | Yellow |

**q.** *Item 17. Destination Contact/Telephone:* Enter if specified by the pilot.

**Note 1.**— For ICAO flight plans see **Appendix B**

**Note 2.**— Local procedures may be developed for use of the back side of Form 7233-1.

### 6-4. FLIGHT STRIP PRINTERS

Departure stations, when transmitting flight notification messages to FSS's having flight strip printers, (see M59 Chart, Handbook 7110.80) shall precede the 3-character addressee indicator with the letter "F" (e.g., FLAX).

### 6-5. ALASKA SPECIAL INSTRUCTIONS

Stations in Alaska shall insert ICAO headings and endings and number all message traffic. In addition to the addressees specified in this chapter, include BASOPS as an addressee on all messages concerning aircraft destined to a military base.

**a.** FAA tie-in facilities perform all flight following functions. When BASOPS have send capability on Service B, they will transmit their ATS messages directly to the circuit. Tie-in FSS's shall assume all responsibilities for flights assigned to departure or destination stations, as appropriate.

**b.** The military base will address all flight plan messages and departures to all addresses specified in this part plus their local tie-in facility.

**c.** Acknowledgments for flight plans and associated movement messages originated by and transmitted by BASOPS shall be addressed to the originating BASOPS office and associated tie-in FSS.

**d.** When BASOPS have a Service B drop and are included in the address, the associated tie-in FSS is not required to notify them of inbound flights.

**e.** Any flight plan, departure (including intermediate departure) or arrival, on an FAA aircraft will be given normal distribution plus PANCYA and PANCYAFI whether VFR or IFR. Use military flight handling procedures in **Section 4** for these messages. It is the pilot's responsibility to advise the FSS of arrival/departure times.

### 6-6. thru 6-9. RESERVED

## Section 2. IFR FLIGHT PLAN HANDLING

### 6-10. DOMESTIC IFR FLIGHT PLANS

IFR flight plans should consist of items 1 through 16 of FAA Form 7233-1. Items 1 through 11 shall be transmitted to the ARTCC as part of the IFR flight plan proposal. Items 12 through 16 shall be retained in the FSS and be available upon request.

### 6-11. NOTIFYING ARTCC

Transmit flight plans and flight plan amendments to the ARTCC within whose control area IFR flight is proposed to begin. Use Handbook 7350.4 or appropriate aeronautical charts to determine the ARTCC to which each transmission shall be made. Use the appropriate 3-character computer address. Transmit flight plans and flight plan amendments via interphone to the error referral position or departure sector when the aircraft's proposed departure time is less than 15 minutes from transmittal time. Advise the ARTCC's departure sector or error referral position, via interphone, when a message is received indicating ineligibility or a response is not received via data terminal within 10 minutes. Transmit flight plans as follows:

**a.** When two or more flight plans are received from the same aircraft, or for flight plans which propose alternating VFR and IFR, stopover, or terminal area delay, the tie-in station for the initial departure point shall transmit separate messages to appropriate ARTCC's for each IFR portion or segment.

**Note.** — BASOPS with access to Service B will transmit messages for the first segment and for any subsequent segments departing from within their ARTCC area.

**b.** Flight plans specifying special use airspace delays (MOA, Warning Areas, Restricted Areas, ATC Assigned Airspace) should be transmitted as in **a.** above except when letters of agreement specify otherwise.

**c.** Aerial refueling delays, or any other en route delays not covered in **a.** or **b.** above and not involving a change of altitude stratum, do not require separate messages. Delay information shall be filed within the route of flight. If a change of altitude stratum is indicated, transmit separate messages as in **a.** or **b.**

**d.** When a composite, stopover or terminal area delay flight plan is revised:

(1) Before departure, transmit the information to the original addressees plus any new addressees.

(2) After departure, transmit the information to all new addressees who are affected by the change.

**e.** When a flight is to depart after 0500 hours local time on the day following the filing of the flight plan, do not transmit the flight plan to the ARTCC until after 0000 hours local time.

**f.** Address all IFR flight plan messages to the ARTCC serving the point of departure and all concerned oceanic and nonconterminous ATS units, except FAA ATCTs.

**g.** For flights inbound to the conterminous U.S. from Alaska or Hawaii, address only the first conterminous U.S. ARTCC (e.g., for a proposed flight from Sitka to Houston address PAZAZQ, CZVRZQ, KZSEZQ).

**Note 1.**— In the event of a time zone difference between the station and the associated ARTCC, use the ARTCC's local time in determining transmission time.

**Note 2.**— The ARTCC within whose control area IFR flight is proposed to begin will forward proposed tower en route flight plan data to the appropriate departure terminal facility. (Reference 7110.65, paragraph2-31).

### 6-12. IFR FLIGHT PLAN CONTROL MESSAGES

*(Pacific — See Pacific Supplement)*

Transmit all proposed IFR flight plan messages to the ARTCC within whose control area IFR flight is proposed to begin.

**a.** Communications functions:

(1) Each ARTCC shall maintain a list of stations adapted for full response capability. All stations which normally input flight plans to the ARTCC should be on the listing.

(2) Flight plan data messages shall be addressed to the computer only. All other types of messages for ARTCC attention shall be addressed to the Flight Data position only. No message shall be addressed to both. Acknowledgments for all numbered messages will be received from the computer or the Flight Data position indicating receipt by the ARTCC but not necessarily computer acceptance.

(3) The ARTCC Flight Data position shall acknowledge for all flight data messages when the computer is non-operational and shall assist the Primary A position in recovery of non-accepted flight plan data messages.

(4) The Flight Data position shall monitor computer inputs and responses during periods of circuit failure outlined in 7110.80 paragraphs 2-12 and 2-13. An acknowledgment will be transmitted

to the guard facility identified in the outage notification message. Recovery of any rejected flight plans for these stations will be accomplished within the ARTCC.

(5) When more than one address is used in the message, only one may be a computer address and it shall be the last address. This restriction does not apply to ICAO formatted flight plans.

**b.** Format

(1) Adhere to a fixed order of data. Do not exceed the stated maximum number of characters or elements allowed for each field in messages addressed to an ARTCC computer. Flight plans filed containing more than the stated character maximums should be sent using the ARTCC flight data address.

(2) One space character must be entered at the end of each data field. The following clarifications are presented:

(a) The first data field of a message need not be preceded by a space.

(b) The last data field of a message need not be followed by a space.

(3) Each field of data is composed of one or more elements. Discrete elements of information within a field are separated by delimiters, generally slashes (oblique stroke) or periods.

(4) Input errors may be corrected in one of the following manners:

(a) Messages addressed using ARTCC computer address:

(1) The single letter X used as a field causes deletion of the previous field (except remarks). Successive X letter fields may be used for multiple deletions. Thus (space) X (space) X (space) causes the deletion of the two preceding fields.

(2) Within the route of flight (field 10), the single letter X, used as an element, causes deletion of the preceding element. Successive X-letter elements are used for multiple deletions. Thus, .X.X. causes deletion of the two preceding elements.

(3) The inclusion of CXX (preceded and followed by a space) in an input message will delete the entire message. The position of the CXX within the input message has no significance, except that CXX will not be recognized within remarks (field 11).

(4) A typing error may be corrected in computer input flight plans by backspacing to the preceding space character and lettering out the error, except that lettering out of the error shall not exceed 4 letter impulses. If a typing error is made in any character through field 00, retype the flight plan.

(b) Messages addressed using ARTCC flight data address.

(1) These messages are handled by facility personnel; for this reason do not use the techniques described in (a) (1) (2) and (3) above. The prime consideration shall be readability of the transmitted data.

(5) All domestic flight data processing computers have the capability to return acknowledgments to the source and, depending on local adaption, return error messages and accept amendments. Adaption is provided on a local basis, generally being based on the level of activity with the inputting station. Notify the appropriate ARTCC Data Systems Specialist or Primary A position when it is suspected that a flight plan has been erroneously rejected by the computer.

(6) IFR flight plans specifying stopovers or terminal area delays require separate messages be sent to the appropriate ARTCC's for each segment. Unless otherwise covered by a Letter of Agreement, treat flight plans proposing special use airspace delays in the same manner. Separate messages are also required for any other en route delays if a change of altitude stratum is proposed at the delay point. See **6-12c(13)(e)(3)(i)(bb)** for delays not involving a change of altitude stratum.

(7) Flight plan messages relayed through ARTCCs to terminal facilities may be entered as a single message when all the following conditions are met;

(a) The entire flight will remain within the terminal airspace.

(b) No full stop landings are involved

(c) Appropriate remarks are included.

(8) Some fields contain the necessary functions to operate the computer data terminal adapters, and are designated by alpha characters. Do not separate these fields with spaces.

**c.** The complete message contents, the order of data, the number of characters allowed within any data field or element, and any associated operational procedures or restrictions are as follows:

(1) Start of Message Code (Field A) — Three characters (required first in every message) composed of /B (new line key).

(2) Preamble Line (Field B) — Consisting of originator, priority, and addresse(s).

(3) End of Line Function (Field E) — Same as (1) above.

(4) Source Identification (Field OO) — Nine or ten characters required, followed by a space character in the following order:

(a) The three character address of the originating FSS or two character identifier of the originating airline office.

(b) Four characters (digits) to indicate time (in UTC) the flight plan was composed by the originator.

(c) Three characters (digits) representing the number of the message, e.g., "021." Begin number series daily at 0000Z. Alaska — number IFR flight plans in accordance with 7110.80 paragraph 2-11.

**Note.** — There are no spaces between (a), (b) and (c) above.

(5) Message Type (Field 01) — The letters "FP" followed by a space character.

(6) Aircraft Identification (Field 02) — Consists of two to seven characters, followed by a space character. The first character of the identification must be a letter.

(a) Phrases such as "Flynet," "Snow Time," etc., which do not identify specific aircraft but are supplemental data defining a special mission or function shall be contained in remarks (field 11).

(b) For foreign aircraft identifications with a numeric as the first character, insert an X as the first character, and explain in the remarks section.

(7) Aircraft Data (Field 03) — Consists of two to nine characters followed by a space character. Aircraft data within the field may vary from one to three elements consisting of:

(a) Number of aircraft (when more than one) and/or heavy aircraft indicator "H." This element contains a maximum of two characters followed by a slash.

**Examples.** —

2/

H/

3H/

10/

(b) Type of Aircraft. This element is mandatory and contains two to four characters consisting of the authorized aircraft designator as contain in the FAA Contractions Handbook (7340.1). Enter military designators of aircraft omitting prefixes and suffixes pertaining to aircraft mission or model.

(c) Equipment Suffix. This element is optional and consists of a slash followed by one letter which is one of the approved designators identifying transponder and/or navigation gear.

(8) Airspeed (Field 05) — Consists of two to four characters followed by a space character. This field shall indicate the filed true airspeed in knots.

(9) Departure Point or Coordination Fix (Field 06) — Consists of two to twelve characters followed by a space character. This field contains the departure point or fix at which an airfile will pick up IFR. It must be a fix, not an airway, and for proposed departures must duplicate the first element of the route of flight (field 10). For airfiles, it must duplicate the fix following the element, VFR, in the route of flight.

(10) Proposed Departure Time (Field 07) — Consists of five characters followed by a space character. This field contains the letter "P": followed by a four digit time group (in UTC).

(11) Requested Altitude (Field 09) — Consists of two to seven characters followed by a space character. Altitudes or flight levels, as appropriate, shall be expressed in hundreds of feet but without leading zeros. The letters "OTP" shall be entered in this field to indicate a requested altitude of VFR conditions on top. Blocked altitudes are indicated by entering the lower altitude of the requested block, the letter "B," and the higher altitude of the block (e.g., 80B100, 240B270) with no intervening spaces.

(12) End of Line (New Line Key) (Field E) — The first occurrence of field E shall always follow field 09 of the message. Any time a subsequent end of line becomes necessary, if used within field 10, it must be preceded by the appropriate element separator (not a space). If used within field 11, field E may be entered at any point within the remarks sequence.

(13) Route of Flight (Field 10) — The route of flight consists of departure point, the route of flight, and normally a destination; followed by a space character:

(a) Field 10 is a fixed sequence field and must begin with a fix (e.g., fix, airway, fix, airway, etc.). The last element may be a fix or one of the route elements VFR, DVFR, or XXX. An element is separated from another element by a period character.

(b) When consecutive fix elements or route elements are filed, the fixed sequence format is maintained by inserting two period characters between the filed field 10 elements (e.g., fix .. fix or airway .. airway).

(c) When a pilot files an airway .. airway combination, obtain, if possible, the point of transition and insert it in the transmitted flight plan. If the point of transition is not named, insert the first named fix encountered along the second airway within the route immediately following the second airway and repeat the second airway following the fix (e.g., SGF.J105.J24.-STL.J24). The foregoing does not apply if the first encountered fix happens to be the next filed junction point within the route.

(d) The slash character (/) is used to file a latitude/longitude fix or in describing ETE.

(e) The maximum number of filed field elements for computer addressed flight plans is 40 (32 in flight plans transmitted to ZCC, ZCN and ZCW). Double period insertions do not count against the 40 element limitation. Transmit flight plans filed exceeding the route element limitation to the ARTCC, not its computer.

(1) Fix Descriptions — A fix must be filed in one of the following ways:

(i) Fix Name — Domestic, Canadian and International identifiers of two to five alphanumeric characters.

(ii) Fix Radial Distance — Consists of eight to eleven alphanumeric characters in the following sequence — two to five characters identifying a navigational aid, three characters of azimuth expressed in degrees magnetic, and three characters of distance expressed in nautical miles from the navigational aid. Zeros preceding a significant character shall be entered before the azimuth and distance components as required to assure the transmission of three characters for each.

(iii) Latitude/Longitude — Consists of nine to twelve characters entered as follows — the latitude shall appear as the first component as four numbers (trailing zeros required) with an optional letter "N" or "S" appended. If the optional letter is omitted, North is understood. Latitude shall be separated from longitude with a slash (/) element separator. Longitude shall appear as the second component as four or five digits (trailing zeros required, leading zero optional) with an optional letter "W" or "E" appended. If the optional letter is omitted, West is understood.

(2) Route Descriptions — A route must be filed in one of the following ways:

(i) Airway — The official airway designator must be filed.

(ii) Coded Routes — Coded routes are a shorthand method of describing a route segment or segments which may have an altitude profile described, an adapted airspeed within the route, re-entry or loop routes as an option or a time delay at a fix within the route as an option. Some of the principal uses of coded routes are as follows:

(aa) Standard Instrument Departure (SID) — SIDs, if used, must be filed by the computer code designator as the second element of field 10 and followed by the transition or exit fix.

(bb) Standard Terminal Arrival (STAR) — STARs, if used, must be filed by the computer code designator as the next to last element of field 10 and be immediately preceded by the entry or transition fix.

(cc) Published Radials — Published radials, e.g. within a preferred route, are considered airways. Do not file unpublished radials.

**Examples. —**

.RBV020
.JFK053.DPK017

(dd) Military Routes — Certain military used routes, e.g. Military Training Routes (MTR), Air Refueling Tracks/Anchors, etc., are considered coded routes. The route designator must be preceded and followed by the entry and exit fixes in terms of fix/radial/distance (FRD) and re-entry information may be suffixed to certain military coded routes, as follows:

(i) The entry and exit fix must be associated with a fix on the route and the entry fix must be prior to the exit fix on the route.

**Examples. —**

TNP355025.IR252
PKE107012

(ii) Routes having reentries for a single Strategic Training Range (STR) site shall contain the entry of alternate entry fix in terms of FRD, the route designator followed immediately by a plus sign (+), either the letter "R" (1st STR site) or "S" (2nd STR site) and a digit indicating the number of reentries.

**Examples. —**

(FRD) IR240 +R2 (FRD)
(FRD) IR240 +S3 (FRD)

(iii) Routes having reentries for two STR sites shall contain the entry/alternate fix in terms of FRD, the route designator followed immediately by a plus sign (+), the letter "R," and a digit indicating the number of reentries on the first STR site, immediately followed by second plus sign (+), the letter "S," and a digit indicating the number of reentries on the second STR site.

**Examples. —**

(FRD) IR240+R2+S3 (FRD)

(iv) STR routes must be entered and exited at the respective primary fix. Alternate STR routes must be entered/exited at the alternate entry/exit fix. The routes must be identified by an individual name.

**Examples. —**

(FRD) IR240+R2(FRD)(Primary)
(FRD) IR240A+R2(FRD)(Alternate)

(ee) North American Routes (NAR) — NAR routes are numerically coded over existing airways and route systems from and to specific coastal fixes serving the North Atlantic.

**Examples. —**

.NA50
.NA9

(ff) Stereo Route — A stereo route must specify a prestored stereo tag. A FP message may be entered with a stereo tag as the only field 10 entry, which causes the field 10 data stored for the stereo tag to be substituted for the stereo tag and processed as the filed field 10; additionally, the filed departure point (field 06) must agree with the stored departure point.

(gg) Incomplete Route Indicator (XXX) — When XXX, the incomplete route indicator, appears in field 10, the element preceding the XXX element must be a fix.

(hh) Visual Flight Rules (VFR) or Defense Visual Flight Rules (DVFR) element — When VFR or DVFR is the second element of field 10, the filed fix following VFR or DVFR must be internal to the ARTCC area to whom the flight plan was initially submitted. When VFR or DVFR is other than the second element in field 10, the element preceding the VFR or DVFR must be a filed fix.

(3) Fix Suffix

(i) En Route Delay Suffix—Consists of an element separator (/) followed by the letter D, followed by the hours and minutes separated by a plus sign (+). Must be appended to a fix.

**Examples. —**

.STL/D1+30
.PKE107012/D2+05

Use of this suffix is limited to the following cases:

(aa) Aerial Refueling Tracks and Anchors. The suffix is appended to the entry fix.

**Example. —**

.ICT248055/D0+30.AR330

(bb) En route delays not involving a change of altitude stratum and not involving a stopover, terminal area delay or special use airspace delay unless specifically covered by a Letter of Agreement with the receiving ARTCC.

(ii) Estimated Time En Route (ETE) Suffix—Consists of an element separator (/) and four digits appended to the destination. Leading zeros are required and the time en route is expressed in hours and minutes.

**Example. —**

.STL/0105

(4) A period is not required after the last element of field 10. If remarks (field 11) are present, a space is required after the last element of field 10. If remarks are not present, no space is required and field F (End of Message) should be the next entry.

(14) Remarks (Field 11) — Consists of the remarks code character — a colon (:) or a question mark (?) — and the remarks. Remarks are considered mandatory or optional and should be limited to those pertinent to air traffic control. Spaces are permitted within the remarks field to separate words or contractions.

**Note. —** The question mark limits the transmittal of the remarks to the ARTCC controlling the point of departure. This should be used when it is known that the remarks are only pertinent to the ARTCC controlling the departure airport/point.

(a) Mandatory Remarks — These remarks shall be transmitted in field 11 whenever a pilot files the information in his flight plan. A mandatory remark is required whenever there is a modification to the flight plan by the specialist.

(1) If it is necessary to make modifications to the filed route of flight for the purpose of achieving computer acceptance of the input due, for example, to correct fix or airway identification, "FRC" shall be inserted in the remarks field. This indicates to the controller that a full route clearance must be issued. "FRC" shall always be first in the case of intracenter remarks (question mark). It must be emphasized that INPUT OPERATORS ARE LIMITED TO MAKING ONLY THOSE CHANGES REQUIRED FOR COMPUTER ACCEPTANCE. Modifications such as those to conform with traffic flows and preferred/recommended routings shall only be made by the pilot (or his operations office) or the controller responsible for initiating the clearance to the aircraft.

(2) When a pilot files an FAA assigned 3-letter aircraft company designator in the remarks section of the flight plan, the authorized radio-telephony callsign must be forwarded in the remarks field. This radio-telephony callsign will always follow a colon.

(b) Optional Remarks — These remarks shall be transmitted when pertinent to air traffic control and can revert to mandatory status for some military flight plans.

(1) In the case of applicable military flights, "NOPAR" shall always be the first item in the intercenter remarks (colon).

(2) Remarks for military flight plans filing an IR route must contain the IR route designator, entry time prefaced by the letter E, exit time pre-

faced by the letter X, and MARSA, when applicable. Remarks for flight plans filing a terminal area delay must contain the airport identifier at which the delay will occur followed by the letter D followed by the duration of the delay in hours plus minutes, followed by the destination airport. These should be the initial items in the remarks field, unless (1) or (2) above applies, and should be in order of occurrence.

(15) End of Message Function (Field F) — Consists of (Enter Key).

**d.** Additional Messages:

The following messages are eligible for input to ARTCC computers via Service B in addition to the Flight Plan (FP) message.

(1) Remove Strips (RS) — The purpose of the RS message input is to advise the computer that data on a particular flight is no longer valid and in effect cancels the flight plan and removes it from computer storage.

(a) Eligibility — RS messages may be entered only for flight plans which:

(1) Are proposed flights.

(2) Have been previously entered by the same source entering the RS message.

(3) The flight plan is inactive, e.g., a departure strip must not yet have been printed.

Otherwise, the following rejection message is returned:

"REJECT — NOT YOUR CONTROL"

(b) Format — Fields 01 (Message type) and 02 (Aircraft Identification) are required.

**Example. —**

.RS TW138

(2) Amendment Message (AM) — The purpose of the AM message is self-explanatory.

(a) Eligibility — Same as for the Remove Strip (RS) message (above).

(b) Format — Fields 01 (Message type) and 02 (Aircraft Identification) are required Field 03 (Aircraft data), 05 (Speed), 06 (Departure Point), 07 (Proposed Departure time), 09 (Requested Altitude), 10 (Route) and 11 (Remarks) are optional.

**Examples. —**

| Message Type | Aircraft Identification | Field to be Revised | New Field Data | Field to be Revised | New Field Data |
|---|---|---|---|---|---|
| AM | UA466 | 07 | 0300 | | |
| AM | AA 4355 | 10 | ORD.J60.DEN | | |
| AM | TW179 | 07 | P0800 | 08 | 350 |

(c) Restrictions — If field 02 is to be amended, no other field may be amended in the same message. If field 02 and other fields are to be amended, send a RS message and reenter the entire corrected flight plan. If an attempt is made to amend field 02 within a multiple amendment message, or to amend field 02 to "M," the following rejection message is returned:

"REJECT — INVALID AMENDMENT"

Field 07 Amendments — An attempt to amend field 07 to anything other than a P-time is not allowed. If such an amendment is attempted, the following error message is returned:

"COFIE INVALID TIME PREFIX"

Amendment to Fields 06, 07, and 10 — Where fields 06, 07, and 10 are amended with a single AM message, the following rules apply:

(1) The amended field 06 replaces the previously stored coordination fix (field 06).

(2) The amended field 07, with appropriate letter prefix, replaces the previously stored coordination time (field 07).

(3) The amended route data (field 10) may completely replace the previously filed field 10, or may be merged with the filed field 10.

(4) If the last element of the amended route data is followed by a destination indicator (↓), this last element becomes the new destination fix.

(5) When amended route data is merged with filed data, it replaces all data between the departure point and the first non-amended element remaining in the field. The last element of the amended data must match the first element of the remaining non-amended data, otherwise the following rejection message is returned:

"REJECT — (last element) CANNOT MERGE"

Amendment to Field 10 only — Except as permitted above, a field 10 amendment must be the only field amended; no other field may be amended with the same message. Otherwise, the following is returned:

"REJECT — INVALID AMENDMENT"

(3) Correction Message (CM) — When an erroneous input flight plan is identifiably correctable, an error message is generated to the sender when the sender is within the departure ARTCC's adapted boundaries.

(a) Eligibility — CM messages may be entered only for the period for which the departure ARTCC's program is adapted, normally 5 minutes. After that time, the flight plan in error drops out to the ARTCC primary A position for reentry. The sender has primary responsibility for corrective action.

**Note.** — Error messages are generated only on messages from sending stations within the adaptation parameters of the departure ARTCC and for only that portion of the route within that ARTCC's adapted boundaries. Other flight plans in error are referred to a primary A position.

(b) Format — Responses to error messages shall be transmitted in the form of a CM message within the time parameters adapted for your ARTCC.

---

**Example.** — ARTCC generated error message:

| Sending Facility | MSG Type | MSG NR | Field in Error | Data in Error | Reason |
|---|---|---|---|---|---|
| DCA | Error | 123 | 08 | 9A | FORMAT |

CM FORMAT:

| ARTCC | FIELD 00 | MSG TYPE | CORRECT DATA |
|---|---|---|---|
| ZCD | DCA 1820123 | CM | 090 |

---

(c) When a CM message in response to an error message results in any change to a pilot filed field 06 (departure point) or field 10 (Route of flight), once the flight plan has been accepted, an AM message shall be sent to add a field 11 intraARTCC remark. In remarks, insert "FRC PILOT FILED (original data)."

(d) Should a "not your control" response be received, do not retransmit the flight plan or the AM. Confirm ARTCC receipt of the flight plan or AM (FRC/REMARKS) via interphone with the primary A position.

---

### COMPUTER FLIGHT DATA INPUT CHART

| *Field* | *Element* | *Example* | *Requirements* |
|---|---|---|---|
| A | Start of Message (SOM code) | /B | Required for SOM recognition |
| B | Preamble Line | FF KMFWZQ | Provides originator, priority, and addressee |
| C | Originator | DTG KMLCYF | Required to end Preamble line |
| D | ZCF | Computer code | |
| E | End of Line | (new line key) | EOL |
| F | End of Message | (enter key) | End of Message |

## 6-13. COORDINATE RNAV ROUTES

When accepting flight plans for coordinate RNAV routes ensure that the route of flight after the departure fix is defined by latitude/longitude coordinates and a fix identifier.

---

**Example.** —

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| MIA | SRQ | 3407/10615 | 2407/11546TNP | LAX |

1. Departure Airport
2. Departure Fix
3. Intermediate Fix or Turning Point
4. Arrival Fix
5. Destination Airport

---

## 6-14. thru 6-19. RESERVED

## Section 3. DOMESTIC VFR FLIGHT PLAN HANDLING

### 6-20. FLIGHT PLAN ACTIVATION

Handle departure reports as a routine radio contact in accordance with paragraph 4-14. If a departure report has not been received within one hour of the proposed departure time and specific arrangements have not been made to activate the flight plan, cancel and file the proposed flight plan.

### 6-21. FLIGHT NOTIFICATION MESSAGE

**a.** Departure stations shall forward a flight notification message to the designated tie-in FSS. Telephone or interphone, when available, shall be used for flights of 30 minutes or less. The flight notification message shall contain the following information:

(1) Aircraft identification
(2) Aircraft type
(3) Destination
(4) ETA
(5) Remarks

**Examples. —**

/B
FF KDETYF
DTG KDCAYF
N2346F AC21 DTW 1303
(Enter key)
/B
FF KLOUYF
DTG KBWGYF
N1234 BE90 LOU 1500 $FP PAH
(Enter key)

**b.** If the pilot elects to close the flight plan with a station other than the designated tie-in FSS, send the flight notification message with remarks (e.g., FIRIV JXN) to both stations.

**Example. —**

/B
FF KDETYF KJXNYF
DTG KDCAYF
N2346F AC21 DTW 1303 $FIRIV JXN
(Enter key)

The station with which the pilot elects to close shall assume destination station responsibilities. The designated tie-in FSS assumes no responsibility.

**c.** If the pilot advises of stopover points, send the flight notification message with remarks (e.g., LNDG CLE) to the appropriate stations as required by subparagraphs a and b above.

**d.** Departure stations shall transmit the flight notification message to the guard station (see M-59 chart Appendix B). that assumes FSS tie-in destination responsibilities when the ETA will occur during the period that the designated tie-in FSS is closed.

**Note.—** Use the Location Identifier Handbook (7350.4) as a reference for civil and military flight plan message routing and airport search purposes. If a civil public use airport is not listed use the Airport/Facility Directory.

### 6-22. OUTBOUNDS DEPARTING FROM OUTSIDE FLIGHT PLAN AREA

**a.** Accept flight plans regardless of departure point. Forward VFR flight plan proposals for aircraft proposing to depart from outside the facility's flight plan area to the tie-in FSS for the departure point in the following format:

(1) Type of Flight
(2) Aircraft Identification
(3) Aircraft Type
(4) Departure Point
(5) Destination
(6) Proposed Departure Time/ETE
(7) Remarks

**Example. —**

/B
FF KBWGYF
DTG KPAHYF
VFR N1234 BE90 BWG LOU P1330/0130 $AIR FILE
(Enter key)

**Note.—** For civil flight movement messages with remarks, precede the remarks with a dollar symbol.

### 6-23. SUSPENSING FLIGHT NOTIFICATION MESSAGE

"Suspense" the flight notification message until acknowledgment is received from the destination station, then file it in the "completed file." If an acknowledgment is not received before the ETA, use the telephone to assure delivery.

**a.** When acknowledgment for a message is required and has not been received within a reasonable time, transmit the signal "QSLQ" and the complete aircraft identification to the addressee.

**Examples. —**

/B
FF KBNAYF
DTG KSATYF
QSLQ N12345
(Enter key)

**b.** *Alaska*-Shall receive acknowledgments from stations in the contiguous United States for flight notification messages.

## 6-24. ACKNOWLEDGING FLIGHT NOTIFICATION MESSAGE OR PROPOSAL

Acknowledge a flight notification message or proposal as soon as practicable after receipt. Prefix the acknowledgement with the letter "R" followed by the full aircraft identification.

**Example.**

/B
FF KCLEYF
DTG KCRWYF
R N123JH
(Enter key)

## 6-25. MAJOR FLIGHT PLAN CHANGES FROM EN ROUTE AIRCRAFT

Assume departure station duties when a major flight plan change is received from an en route aircraft.

**a.** When an aircraft on a VFR flight plan changes destination obtain, as a minimum, the following information:

(1) Aircraft identification.
(2) Aircraft type.
(3) Departure airport.
(4) Old destination.
(5) Present position.
(6) Altitude and route.
(7) New destination.
(8) Estimated time en route.

**b.** Transmit a flight notification message to the original and new destination stations containing the aircraft identification, aircraft type, new destination, new ETA, and remarks, e.g., DEPD ROA.

**Examples. —**

/B
FF KLOUYF KSTLYF
DTG KHTSYF
N67XF C185 STL 1649 $DEPD ROA
(Enter key)

**c.** When an aircraft changes from IFR to VFR flight plan, obtain, as a minimum, the following information, and transmit a flight notification message to the destination station:

(1) Aircraft identification and type.
(2) Departure station.
(3) Position.
(4) Route.
(5) Destination.
(6) Estimated time en route.

**Examples. —**

/B
FF KELPYF
DTG KLAXYF
N3745C BE55 ELP 2341 $DEPD SFO
(Enter key)

**Note.—** Obtaining the name of the original departure station provides a source of additional information in case the aircraft becomes overdue.

## 6-26. CHANGE IN ETA OR EXTENSION OF ETE

When an aircraft extends ETE or provides a new ETA, forward this information to the destination station. The destination station shall acknowledge and thereafter use the new ETA as the standard for any necessary followup action; e.g., QALQ message, etc.

**Example (ETA).—**

/B
FF KHBRYF
DTG KMLCYF
MLC001 HBR
N4567 E1212
(Enter key)

**Example (ETE).—**

/B
FF KHBRYF
DTG KMLCYF
MLC002 HBR
N4568 X1+30
(Enter key)

**Note.—** All ETA and ETE messages shall be numbered messages.

## 6-27. FLIGHT PLAN CLOSURE

Do not transmit arrival reports except under unusual circumstances or in the following cases:

**a.** Arrival, or any other information involving FAA, or Canadian MOT aircraft, shall be transmitted to any facility requested by the pilot.

**Examples. —**

/B
FF KDCAYF
DTG KLAXYF
LAX001 DCA
N2 A0839
(Enter key)

**b.** When a pilot closes his flight plan with other than the destination station, transmit a closure message to the destination station. The destination station shall acknowledge.

**Example. —**

/B
FF KMEMYF
DTG KATLYF
ATL001 MEM
N2345 C1217
(Enter key)

**c.** When a pilot closes his flight plan with a destination station that has not received a flight notification message, ask him for the name of the departure station. Transmit an arrival message to the departure station, which shall, in turn, relay the arrival information to the station holding the flight notification message in the "active" file.

**Note.**— Flight notification messages are occasionally routed to the wrong destination because of identical or similar sounding name.

**Examples.** —

/B
FF KROWYF
DTG KSATYF
SAT001 ROW
N12345 A1745 FPNO
(Enter key)

### 6-28. PART-TIME FSS CLOSURE ACTION

Part-time facilities shall forward all information on inbound flights and outbound flights whose ETA is after or within 1 hour of the scheduled closing time to the designated guard FSS.

### 6-29. ALASKA SPECIAL INSTRUCTIONS

Stations in Alaska shall insert ICAO headings and endings and number all message traffic.

**a.** Control stations are responsible for locations served by remote control outlets and single frequency outlets.

**b.** Control stations shall perform destination station duties when their associated part-time facilities are closed.

**c.** Stations originating messages to part-time facilities shall also address the control station. Only the station assuming destination station responsibilities shall acknowledge.

### 6-30. thru 6-39. RESERVED

# Section 4. MILITARY FLIGHT PLAN HANDLING AND OPERATIONS

## 6-40. FLIGHT PLAN HANDLING

Accept military flight plans from any source including collect telephone calls. When a departure report is received, transmit a flight notification message to the destination tie-in (FSS or BASOPS) as specified in the Location Identifiers Handbook, 7350.5. A flight notification message may be sent before actual departure for flights of short duration if BASOPS agrees. Transmit the following items:

**a.** Type of flight plan.

**b.** Aircraft identification.

**c.** Type aircraft.

**d.** Departure point.

**e.** Destination.

**f.** ETA.

**g.** Remarks, e.g., coded data pertinent to services, passengers or cargo. In the absence of remarks, enter the letter "N" (meaning none) in the remarks field.

**Reference—** DOD Flight Information Publication; General Planning document.

**Example. —**

```
/B
FF KSATYF
DTG KSAVYF
VFR R12345 UH1 SVN SKF 1920
AP3NP3
(Enter Key)
```

## 6-41. SUSPENSING FLIGHT NOTIFICATION MESSAGE

"Suspense" the flight notification message until acknowledgment is received, then file it in the "completed" file. If an acknowledgment is not received within the following time periods, use the telephone to assure delivery:

**a.** Before ETA if ETE is 30 minutes or less.

**b.** Thirty minutes after departure if ETE is between 30 minutes and two hours.

**c.** One hour before ETA if ETE is two hours or more.

**d.** Thirty minutes after departure if RONVIP information is contained in remarks.

## 6-42. ACKNOWLEDGMENT

Acknowledge receipt of a military flight notification message by transmitting the contraction "R" followed by the full aircraft identification. Notify BASOPS of the inbound flight; and if the aircraft is VFR, "suspense" the message until arrival or closure information is received.

## 6-43. "STOPOVER" FLIGHT NOTIFICATION

Address military stopover flight notification message to (and obtain acknowledgments from) destination tie-in (FSS or BASOPS) serving all destination airports.

**a.** Transmit items a through g paragraph 6-40, and the following in order listed:

(1) For each subsequent leg:

(a) Destination

(b) ETE

(c) Remarks applicable to leg only.

(2) Remarks applicable to entire flight.

(3) Void time (compute by adding total time inflight and total time at each stopover point to original departure time).

**b.** Separate stopover legs by inserting a slant (/) at the end of each leg except the last. Begin each leg on a new line.

**Examples. —**

```
/B
FF KCHSYF KJAXYF KMIAYF
DTG KDCAYF
IFR VV12345 P3 ADW CHS 1300/
NZC 1+[illegible] A5 BALL DP10 AP5 S/
MIA 2+[illegible]0 NO DE-ICING EQUIPMENT
011830
(Enter Key)
```

**c.** For composite flights, specify type flight plan as the first item of each leg.

**d.** When en route delays are involved, include delay time in ETE.

## 6-44. ACTION BY ADDRESSEES

All addressees shall acknowledge for military stopover flight notification/departure messages immediately upon receipt, and take the following action:

**a.** IFR flight.

(1) Notify BASOPS of the inbound flight.

(2) Upon request, deliver flight plan amendments to ARTCC.

(3) Forward the actual departure time to the the tie-in (BASOPS or FSS) for the next destination.

(4) File all related messages when acknowledgment for the departure message is received.

(5) If no information is received, e.g., departure time, revised ETA, etc., indicating that the flight is still active prior to the void time, note this on the flight notification message and file.

**Examples. —**

```
/B
FF KJAXYF
DTG KCHSYF
VV12345 D1345
(Enter key)
```

**b.** VFR flights.

(1) Notify BASOPS of the inbound flight.

(2) "Suspense" the message and assume destination station responsibility.

(3) Forward the departure time to the tie-in (BASOPS or FSS) responsible for the next destination, and assume departure station responsibility.

(4) If no information is received, e.g., departure, revised ETA, etc., indicating that the flight is still active prior to the void time, note this on the flight notification message and file.

## 6-45. EN ROUTE CHANGES

When an en route aircraft changes the ETA, changes from VFR to IFR, or requests that other significant information be forwarded, transmit this information to the destination station. When a change of destination is received, transmit a revised flight notification message to the departure point and to the original and new destination. Include the type of flight plan, aircraft identification and type, departure point, original destination, position and time, the words "CHGD DESTN," new destination, ETA, and remarks.

**Example of change of destination—**

```
/B
FF KDCAYF KLOUYF KSTLYF
DTG KHTSYF
IFR A12345 F89 ADW SDF OVR ECB 1730
CHGD DESTN BLV 2030
(Enter key)
```

## 6-46. CIVIL AIRCRAFT LANDING/DEPARTING MILITARY BASE

**a.** Apply military flight plan procedures to all civil aircraft landing at military bases.

**Note.—** It is the civil pilot's responsibility to obtain permission (from military authorities) to land at a military base.

**b.** Apply civil flight plan procedure to civil aircraft departing military bases en route to civil airports.

## 6-47. ARRIVAL REPORTS

Transmit arrival reports to the departure station only when:

**a.** Requested by BASOPS.

**b.** Special military flights arrive.

**Example.—**

```
/B
FF KMIAYF
DTG KDCAYF
VV12345 MIA A1212 ADW
(Enter key)
```

**c.** No flight notification message received.

**Example. —**

```
/B
FF KMIAYF
DTG KDCAYF
VV12345 MIA A1212 ADW FPNO
(Enter key)
```

## 6-48. FLIGHT ADVISORY MESSAGES

**a.** Issue advisories to aircraft in flight only when hazardous conditions arise. If the aircraft destination is a civil airport, the destination FSS is responsible for screening weather, and issuing advisories to inbound aircraft. If the destination is a military base, the responsibility rests with BASOPS.

**b.** The tie-in FSS originating the advisory or receiving it from the originating BASOPS shall determine the FSS nearest the aircraft's estimated position for VFR flights, or the appropriate ARTCC for IFR flights, and transmit the message to that location. Do NOT give these messages ALCKT dissemination, but, normally limit the addressee to one facility. Include in the message text: "FLT ADVY," aircraft identification and type, route of flight, in that order. The last item of the text shall be the identifier of the originating BASOPS or FSS.

**Example. —**

```
/B
FF KZIDZR
DTG KCOUYF
COU005 ZID
FLT ADVY. A12345 T38 GVW J80 DAY
DAY WEA BLO LNDG MIN. SUG PROCD
CVG. ADZ INTENTIONS. DLVR 1625
GVW BASOPS.
(Enter key)
```

**c.** If unable to deliver the flight advisory to the aircraft within 15 minutes after the requested delivery time, inform the originator and file the message.

## 6-49. MISCELLANEOUS MESSAGES

Accept and forward messages (from any military authority) that concern aircraft movement, national defense, safety of flight, or emergencies. ALCKT select code or codes shall not be used.

**a.** FSS tie-in stations shall accept from military bases, which do not have a drop on the air weather net nor direct communications with an adjacent BASOPS, weather reports and NOTAM's for forwarding to the adjacent BASOPS which has the military weather circuit capability. In all cases the originating BASOPS shall designate the BASOPS to which these messages shall be delivered.

**b.** FSS tie-in shall inform military operations offices of any flow control service messages which might affect their operations.

### 6-50. ELECTRONIC COUNTER MEASURE (ECM) ALERTS

Transmit, via Service B, ECM messages to tie-in serving the addressees. If acknowledgments are not received within one hour, deliver via telephone.

**Example. —**

/B
FF KCOUYF KZKCZR
DTG KDCAYF
DCA001 COU ZKC
(text)
(Enter key)

**Note.—** Only stations addressed following the message number will acknowledge.

### 6-51. SPECIAL MILITARY FLIGHTS

**a.** Advise the ARTCC of flight notification messages, progress reports, changes en route, and related messages concerning Presidential or Vice Presidential flights.

**b.** *Alaska*—In addition to above, give advance notice to all RCC's along the route of flight. Telephone SARCC 752-0227, or 752-0128. Initiate COMMUNICATIONS search procedures if arrival not received within 15 minutes after ETA and immediately notify ANRCC (Alaskan NORAD Region Control Center).

### 6-52. MAC AND SAM FLIGHT MESSAGES

Forward MAC and SAM flight messages containing the request "PASS TO MAC ACP" to the airlift command post specified by the pilot.

### 6-53. MILITARY FOREIGN FLIGHTS

Generally, all military foreign flights are required to clear through specified military bases. Pilots normally will not file flight plans directly with an FSS unless BASOPS is not available. BASOPS with no service B access will forward an ICAO-type flight plan message via their tie-in FSS for relay through the AFTN. BASOPS should specify all addressees, both ATC and operational, in accordance with ICAO standards and military regulations.

### 6-54. HANDLING OUTBOUND FLIGHTS FROM U.S.

For outbound flights from the U.S., departure BASOPS may require an arrival message from the destination. Handle as follows:

At the request of BASOPS, the departure tie-in FSS will include "REQ ARR" in the remarks section of the ICAO flight plan. The tie-in FSS may terminate suspense action only after receipt of an arrival message and delivery to BASOPS.

### 6-55. HANDLING INBOUND FLIGHTS TO U.S.

Upon receipt of an inbound flight plan with "REQ ARR" in the remarks section, the destination tie-in FSS shall suspend the flight plan until arrival information is received from BASOPS and forwarded to the departure location.

### 6-56. USAF/USN UNDERGRADUATE PILOTS

To identify aircraft piloted by solo USAF/USN undergraduate student pilots (who may occasionally request revised clearances because they normally are restricted to flight in VFR conditions), the aircraft identification in the flight plan shall include the letter "Z" as a suffix. Do not use this suffix, however, in ground to air communication.

**Note.—**USAF solo students who have passed an instrument certification check may penetrate cloud layers in climb or descent only. Requests for revised clearances to avoid clouds in level flight can still be expected. This does not change the requirement to use the letter "Z" as suffix to the aircraft identification.

### 6-57. AERIAL REFUELING TRACKS

Upon notification from the ARTCC or a scheduling activity that an established aerial refueling track will be activated, and all or part of the activity will take place outside of restricted/ warning areas or positive control area:

**a.** The tie-in FSS shall transmit a NOTAM(L) to all FSSs within 200 nautical miles of the track ARTCCline

**b.** During pilot briefings, IFR refueling information will be provided upon request.

**c.** Applicable VFR refueling information shall be provided in all briefings.

### 6-58. MILITARY TRAINING ACTIVITIES

**a.** Unless otherwise covered in a Letter of Agreement, the tie-in FSS for an MTR scheduling unit, or MOA controlling ARTCC, shall transmit an unnumbered message including a date time group, via Service B, addressed to individual FSSs and

ARTCCs within 100NM of an MTR/MOA as follows:

(1) Tie-in FSS-On receipt of the daily MTR schedule from the military scheduling activity.

(2) ARTCC-On receipt of a change to the published MOA activity schedule.

**Note 1.—** Activity schedule should be combined and transmitted as a single message whenever possible.

**Example. —**

/B
301200
IR104 1400-1440 60 AND BELOW
1545-1630 50 AND BELOW
1715-1810 80 AND BELOW
VR066 1330-1440 100 AND BELOW
1600-1655 30 AND BELOW
(Enter Key)

**Note 2.—** Some areas require extension of the 100NM rule to ensure complete geographical coverage. NFDC will identify those FSSs within 100NM of the route. Inquiries relative to FSS coverage should be referred to ATO-250 (NFDC).

**Note 3.—** Slow speed low altitude training routes are not to be transmitted, briefed on or posted. The contraction VLAR is not an approved contraction.

**b.** A VR operation may be filed as a composite-flight, IFR-VFR-IFR. Unless the military BASOPS has the capability to do so, the tie-in FSS shall transmit the IFR proposals in separate messages to the appropriate ARTCC(s) in accordance with paragraphs **6-10** through **6-13**.

**c.** Specialists shall familiarize themselves with all MTRs and MOAs (or segments thereof) within 100NM of their facilities.

**d.** Upon request, FSS's shall furnish pertinent information on those MTRs and MOAs within 100NM of their facilities.

*Phraseology:*

CAUTION SHOULD BE EXERCISED WHEN CROSSING BETWEEN (geographical or NAVAID reference) AND (geographical or NAVAID reference). HIGH SPEED MILITARY JET AIRCRAFT WILL BE OPERATING (altitude) AND BELOW BETWEEN (times) ZULU.

**e.** Broadcast at H +15 hourly and include on the PATWAS and TWEB (VOR and L/MF) a statement for MTR and MOA activity within 100NM of your facility, at least 30 minutes prior to the start of and until the activity is concluded.

*Phraseology:*

MILITARY TRAINING ACTIVITY ADVISORY-HIGH-SPEED MILITARY OPERATION(S) BEING CONDUCTED BELOW 10,000 FEET WITHIN 100NM OF (name) FSS. CONTACT (name) FSS FOR DETAILS ON THIS ACTIVITY.

**f.** Information received from either the military scheduling activity or ARTCC that modifies an MTR and MOA schedule shall be transmitted by unnumbered message via Service B as defined in **6-58a.**

**Note.—** The above procedures do not preclude a specialist from exercising his/her own best judgment in providing further assistance when there is the slightest doubt the adequacy of data being furnished to alert a pilot to the existence of an MTR or MOA.

## 6-59. CIRVIS MESSAGES HANDLING

**a.** JANAP 146 (E), "Canadian-United States Communications Instructions for Reporting Vital Intelligence Sightings" is an unclassified, non-registered publication, prepared by the U.S. Military Communications-Electronics Board in conjunction with Canada, for joint U.S. and Canadian use. An Air Force pamphlet entitled "CIRVIS" which contains extracts from JANAP 146 (E) should be in all facilities' files.

**b.** Relay CIRVIS reports by the most expeditious means to the appropriate ARTCC.

## 6-60. PACIFIC-DELIVERY OF CIRVIS/MERINT MESSAGES

**a.** Pacific Region FAA facilities shall immediately pass the CIRVIS message to the appropriate ARTCC. Specific relay and/or delivery responsibilities are as follows:

(1) Hawaiian Island facilities: Interphone to Honolulu ARTCC; transmit confirmation message addressed to the Air Defense Control Center (ADCC) and Hawaiian Sea Frontier Operations Control Center.

(2) Samoa CAP/IS: Transmit message addressed to Honolulu ARTCC, the Air Defense Control Center (ADCC), and the Hawaiian Sea Frontier Operations Control Center.

**Example. —**(Report as filed by Samoa CAP/IS)

/B
SS PHNLZO PHNCYX
232020 USTUYF
CNTR PHNL. ADCC KUNIA. HAWSEAFRON OPERATIONS CONTROL CENTER KUNIA. CIRVIS REPORT PA818 SIGHTED XXXXX XXXXX XXXXX (TEXT) XXXXX JONES CAP/IS 23202
(Enter Key)

**b.** The Honolulu and Guam ARTCC's will forward the CIRVIS message immediately by interphone to the military commands designated by CINCPAC. These military addressees will be responsible for forwarding the information to other military services, or higher headquarters, as required.

**c.** CINCPAC has designated the following military commands as addressees for reports originating in the Pacific area and handled by FAA facilities:

(1) For reports originating in the Honolulu FIR:

Air Defense Control Center, Kunia (ADCC); Hawaiian Sea Frontier Operations Control Center, Kunia.

(2) For reports originating in the Guam FIR:

SAC Command Post, Anderson Air Force Base, Guam; COMNAVMARIANAS Operation.

The action required of the military commanders upon receipt of a sighting report is dictated to a large extent by whether the word CIRVIS appears as the first word of the report. This word indicates that the information may be of vital importance to the security of the United States, and requires certain specific action on the part of various military commanders. For this reason, the word "CIRVIS" shall appear in sighting reports handled by FAA facilities ONLY WHEN SO DESIGNATED BY THE OBSERVER. Sighting reports received without this designation shall be accepted and forwarded verbatim to the addressee indicated above without an identifying prefix; e.g., "PA818 REPORTS SIGHTING VESSEL...etc." All sighting reports, whether or not designated as CIRVIS, shall be assigned the priority prefix "SS" to ensure rapid handling. Because of the strategic location of Wake and Samoa, CINCPAC is also interested in reports from ground observers concerning questionable or suspicious actions on the part of unidentified aircraft or vessels in the vicinity of these islands. Such reports shall be given the same distribution as CIRVIS reports.

**d.** Sighting Reports (MERINT) that may be received by Pacific Region FAA facilities, particularly at Wake and Samoa, shall be given the same distribution as described for CIRVIS reports. Instructions concerning MERINT reports are contained in Chapter III of JANAP 146 (D).

**e.** All facilities shall maintain a copy of JANAP 146 (D) in a suitable binder and keep available for reference in the facility operations area.

### 6-61. 7602ND AIR INTELLIGENCE GROUP (AFIS) MESSAGES—CONTERMINOUS U.S. ONLY

To assist the 7602nd Air Intelligence Group in locating downed enemy aircraft during periods of hostilities, immediately forward all information about downed enemy aircraft to the appropriate ARTCC for relay to the NORAD Direction Center by the fastest means available.

### 6-62. thru 6-69. RESERVED

## Section 5. LAW ENFORCEMENT MESSAGES

### 6-70. LAW ENFORCEMENT ALERT MESSAGES

**a.** Safeguard such information from disclosure in accordance with FAA Order 1600.5. Handle such requests as follows:

(1) Determine from facility records whether or not there is an effective alert on the same aircraft.

(2) If an alert is outstanding, refer the other request to the initiating agency.

**b.** If credentials are not offered in person, ask to see them. Handle telephone request as follows:

(1) Obtain the callers name, agency, and business telephone number.

(2) Immediately thereafter, verify the telephone number through operator or directory assistance, call the number to confirm the caller's identity.

**c.** Refer all other requests, e.g., insurance adjusters, aircraft owners, to local police or FBI as appropriate, who may then request an alert message, except that Washington FSS shall refer such requests to the Office of Air Transportation Security.

**d.** Local FBI office requests shall be referred to their Alexandria, Virginia, FBI Field Office for dissemination through Washington FSS. U.S. Customs requests shall be referred to their Washington Communications Center, and Drug Enforcement Agency (DEA) requests shall be referred to the El Paso Intelligence Center (EPIC).

**e.** Obtain the following information from the requestors:

(1) Requestor's identity (agency, person presenting request, business telephone).

(2) Date.

(3) Category of request (stolen aircraft or aircraft lookout).

(4) Search area (specific or nationwide).

(5) Description of aircraft, manufacturer's serial number.

(6) Details for message text (when applicable, date, and place of theft, identities of suspects, direction headed, estimated range, etc.).

(7) Agency or person to be contacted in event of aircraft's recovery or sighting, including the telephone number to be called.

(8) Special handling instructions.

(9) 4etermine if requestor has made NCIC entry regarding stolen aircraft.

### 6-71. TRANSMISSION OF MESSAGES

**a.** Transmit Stolen Aircraft Alerts nationwide as ALCKT messages (Reference 7110.80).

**b.** Transmit Aircraft Lookouts to those circuits in whose geographical areas the aircraft could be expected to operate.

**c.** Encode all messages, including supplemental and cancellations, to FAA Headquarters, Region, and ARTCC telecommunications staffs.

### 6-72. ALERT MESSAGES

**a.** Alert messages shall consist of all pertinent information provided by the requestor. Identify message type and initiating agency in first line.

**Example. 1—**

```
/B
FF KNKAYF
DTG KROAYF
LE ALCKT SVC B
STOLEN ACFT ALERT. MILTON COUNTY VA
SHERIFF.
N1234Z CSNA C150 SER 180X. RED/WHITE.
STOLEN MILTON CITY VA ARPT 5/22/84.
ACFT HDG SW. FUEL RANGE 600 MI. NO SUS-
PECTS.
DATA ENTERED NCIC. ANY INFO PHONE ABV
SHERIFFS OFFICE 703/326/7622.
HARPER 221930
(Enter key)
```

**Example 2. —**

```
/B
FF KXXJYF KXXHYF
DTG KSATYF
LE ALCKT SVC B
ACFT LOOKOUT BEXAR COUNTY TX SHERIFF
N3412F PIPER PA28
LCTN—CHIHUAHUA MEXICO
DESTN—SAN ANTONIO TX. IF LCTD NTFY ABV
SHERIFFS OFFICE 512/781/3333
CNL 1/22/85.
HARPER 151955
(Enter key)
```

**b.** The originating FSS shall transmit a supplemental alert when requested by Air Transportation Security Divisions/Staffs, the requestor, or when in the judgment of the originating FSS, independent information necessitates a change. The supplemental alert shall reference the initial alert and repeat all necessary data required to supersede all prior alerts.

**Example. —**

```
/B
FF KNKAYF
DTG KROAYF
LE ALCKT SVC B
SUPPL STOLEN ACFT ALERT. MILTON COUNTY
```

VA SHERIFF.
N1234Z CSNA C150 SER 180X RED/WHITE.
STOLEN MILTON CITY VA ARPT 5/22/84. ACFT
SERVICED MEMPHIS TN 5/23/84. BELIEVED
HDG W. FUEL RANCE 600 MI. NO SUSPECTS.
DATA ENTERED NCIC. FWD ANY INFO TO
NEAREST FBI OFC OR ABV SHERIFFS OFFICE
703/326/7222.
SHIRLEY 231400
(Enter key)

## 6-73. CANCELLATION PROCEDURES

**a.** Stolen Aircraft Alerts remain in effect until cancelled by the originator, Air Transportation Security Division, or Summary. Aircraft Lookouts are in effect 7 days unless otherwise specified.

**b.** Transmit cancellation notices to facilities previously alerted.

**Example. —**

/B
FF KNKAYF
DTG KROAYF
LE ALCKT SVC B
CNL STOLEN ACFT ALERT N1234Z
ACFT LCTD TULSA OK. SUSPECT IN CUSTODY.
SHIRLEY 232010
(Enter key)

## 6-74. ALERT MESSAGE ACTION

**a.** Upon receipt of a law enforcement alert message, all FSSs within the designated search area shall:

1. Immediately alert and distribute copies of the alert to other FAA facilities over which they exercise normal communications guard such as FSDOs, ACDOs, RAPCONs and ATCTs.

2. Check facility records for past 24 hours.

**b.** Upon receipt of knowledge concerning an aircraft for which a current alert message is held, do the following:

(1) Forward any information on the aircraft to the originating FSS and the requestor when specified in the message.

(2) Immediately notify the cognizant Air Transportation Security Division/Staff by the most rapid means.

(3) Do not take any other action affecting the aircraft, cargo, crew or passengers not normally related to the job responsibilities.

## 6-75. STOLEN AIRCRAFT MESSAGE SUMMARIES

**a.** A summary listing the registration, type, and color of all aircraft reported stolen within the past 90 days is issued monthly and a semi-annual summary is issued for all current stolen aircraft alerts. All alerts not on the semiannual summary are cancelled.

**b.** Stolen Aircraft Summaries and Alerts may be distributed outside FAA to fixed base operators and law enforcement agencies at the discretion of the facility Air Traffic Manager. (Aircraft lookouts shall not be distributed outside FAA.)

## 6-76. thru 6-79. RESERVED

# Section 6. NONEMERGENCY PARACHUTE JUMPING

## 6-80. COORDINATION

All pertinent information received from pilots prior to and during parachute jumping activity shall be coordinated with other affected ATC facilities.

## 6-81. PREJUMP RADIO COMMUNICATIONS

**a.** When a prejump radio call required by FAR 105.14 is received, contact the ARTCC sector or terminal facility in whose airspace the jump begins. If the controller has pertinent traffic, advise the jump aircraft to contact the control facility on the appropriate frequency for traffic information.

**b.** If the aircraft is unable to contact the control facility direct, obtain traffic information and relay it to the aircraft.

**Example. —**
"Cessna Four Zero Yankee, ATC advises traffic is a Cessna Four Twenty-one passing the Sputs Intersection eastbound on Victor One Fifty-seven at seven thousand."

# Chapter 7. INTERNATIONAL OPERATIONS

## Section 1. GENERAL

### 7-1. BASIC PROCEDURES

**a.** Instructions in this chapter apply to IFSS's, ARTCC's, FSS's and the Kansas City (KMKM) IATSC. All personnel who are required to handle international messages shall be familiar with and use those ICAO documents containing instructions for preparing and handling communications for the AFTN circuits. These basic international telecommunications instructions are found in "International Standards and Recommended Practices" ICAO Annex 10 — Aeronautical Telecommunications, Volume II and Document 7946, Manual of Teletypewriter Operating Practices. DOC 4444-RAC 501, Rules of the Air and Air Traffic Services list the various Air Traffic Service movement messages. Location indicators are contained in ICAO Document 7910, and Designators for Aircraft Operating Agencies Aeronautical Authorities and Services are contained in ICAO DOC 8585. FAA policies concerning acceptance of message for international transmission are contained in FAR Part 189. These documents and amendment services should be retained at FAA facilities which handle international messages. FAA personnel shall not act as agents for any aircraft operating or dispatching company.

**b.** Use the ICAO message envelope specified in handbook 7110.80, when transmitting messages to Canada or Mexico via Service B/AFTN.

(1) Use a six character addressee indicator; the first four characters are the ICAO location indicator and the last two characters designate the facility type responsible for flight planning at that location.

(a) Six character Canadian relay facilities are listed in Handbook 7350.5. Use "YF" as the last two characters for Mexico.

**c.** Do not accept "assumed departure" flight plans when the destination is in a foreign country.

**d.** For Search and Rescue purposes, request pilots filing VFR flight plans to notify the FSS nearest the border crossing point of the border crossing time. Reference Paragraph 8-41

### 7-2. ADHERENCE TO ICAO STANDARDS

Automation of the AFTN requires precise adherence to the ICAO standards. It is imperative that all offices or facilities prepare messages error free.

### 7-3. ICAO—MESSAGE—FORMAT

**a.** ICAO message format is illustrated in detail in Annex 10, Volume II. Those facilities directly connected to KMKM, on AFTN channels (New York WSO, Miami IFSS, etc.) use standard ICAO procedures with KMKM. All other facilities on the Service B networks that do not have a direct AFTN connection to KMKM, shall enclose the ICAO message within a standard Service B envelope as outlined in paragraph **7-3b.**

**b.** International messages *(Alaska — Not Applicable)* will generally be introduced into the system by facilities on Service B originating messages requiring relay to the AFTN circuits or by the Kansas City IATSC in the relay of ICAO traffic from the AFTN to the domestic B system. Handle these messages as follows:

(1) International messages originated by a facility on Service B for relay to AFTN via Kansas City IATSC.

(a) Start of message /B New line key

(b) Preamble (originator, space, priority, space, addressee(s) ).

(i) Originator — three character domestic identifier.

(ii) Priority — two character precedence field.

(iii) Addressee(s) — not to exceed sixty-nine characters, or nine addressees. Each addressee separated by a space.

(c) End of Line (EOL) (new line key).

(d) End of Text message (EOM) (enter key).

(2) Messages originated by a facility on Service B which are forwarded to a gateway facility to determine correct address.

**Example. —**

/B
FF KMIAYF

DTG KICTYF
(Enter key)

## 7-4. CODE ASSIGNMENTS

The ICAO location identifier KMKM is assigned to the Kansas City IATSC. All facilities directly connected to KMKM have discrete transmission identification letter assignments.

## 7-5. CIRCUITRY

All AFTN circuits are connected to the Kansas City IATSC. KMKM is the only interface between AFTN and Service B.

## 7-6. ARTCC RELAY OF VFR MESSAGES

ARTCC LABS operators shall relay all international VFR flight movement messages to the adjacent FSS/IFSS, unless the FSS is also an addressee.

**Note.** — If an overseas unit erroneously routes a VFR movement message to an ARTCC, the automatic AFTN switch will not divert it to an FSS or IFSS.

## 7-7. thru 7-19. RESERVED

## Section 2. CANADIAN MOVEMENT AND CONTROL MESSAGES

### 7-20. FLIGHT PLAN/CUSTOMS REQUIREMENTS

Specific flight plan, Customs and other requirements of individual countries are listed in the FAA International Flight Information Manual (IFIM).

### 7-21. RECORDING TIME FILED

Record on the flight plan form the time that a flight plan is filed. This time will constitute evidence of the pilot's intention to comply with Customs, Immigration, and Public Health requirements and will be made available upon request from these authorities.

### 7-22. AIR-FILED FLIGHT PLANS

Accept air-filed flight plans or changes in destination information from aircraft inbound from foreign locations and, if requested by the pilot, enter Customs notification service.

### 7-23. FLIGHT PLAN CHANGES AND CANCELLATIONS

**a.** Assume departure station duties when a flight plan change is received from an aircraft en route to Canada.

**Reference.**— Paragraph 6-25 and 6-26.

**b.** An FSS receiving a VFR flight plan cancellation report from aircraft operating to Canada shall transmit a cancellation message to the Canadian tie-in facility.

**Reference.**— Paragraph 6-27b.

### 7-24. INBOUNDS FROM CANADA

**a.** Acknowledge receipt of flight notification message as soon as practicable by transmitting the contraction "ACP" and the full aircraft identification, e.g., "ACP N711VR."

**b.** When Customs flight notification service is requested, as indicated by inclusion of "ADCUS" in remarks, deliver the complete message to the associated Customs office as soon as practicable.

(1) Provide the service only for those airports where availability is advertised in the Airport/Facility Directory. The pilot is responsible for making his own Customs arrangements for other airports.

(2) Notify only the Customs office which, in turn, is responsible for notifying other inspection agencies concerned.

**c.** Suspense VFR messages until arrival or closure information is received. File IFR messages after delivery to Customs.

### 7-25. OUTBOUNDS TO CANADA

**a.** Accept flight plans only for aircraft proposing flight to a designated airport of entry.

**b.** Accept Customs notification requests for relay via flight plan only for airports of entry where Customs flight notification service is provided and when proposed ETA is during Customs service hours.

**c.** Upon notification of departure of VFR flights or IFR flights requesting customs notification, transmit a flight notification message directly to the destination Canadian relay facility.

(1) Address VFR messages to the destination relay facility listed in 7350.5, Location Identifiers.

(2) Address IFR messages to the associated ACC. (CZ-ZF)

(3) When available, use interphone or telephone for flights of 30 minutes or less.

**d.** Refer to the Canada and North Atlantic IFR and VFR supplements to determine Customs hours of service, availability of Customs flight notification service (ADCUS), and relay facility for infrequently used Airports of Entry not listed in the Location Identifier handbook 7350.5.

**e.** Transmit flight notification messages in the following format:

(1) Type of flight plan.

(2) Aircraft identification.

(3) Aircraft type.

(4) Departure point (three letters).

(5) Destination (three letters).

(6) ETA.

(7) Remarks:

(a) ADCUS and number of persons aboard (only if Customs notification is requested and available).

(b) FP and location identifier of FSS holding original flight plan (if applicable).

**Example. —**

/B
FF CZYZZF
DTG KBUFYF
VFR N711VR C182 BUF YYZ 1735 ADCUS 2
(Enter key).

**f.** Suspense VFR messages until acknowledgment is received

**Reference.— Paragraph 8-41**

**Note.—** Canada routinely acknowledges all VFR flight notification messages. Do not expect acknowledgment for IFR flight notification messages.

(1) If acknowledgment is not received within 30 minutes after departure, transmit the contraction "REQ ACP" (request acceptance) and the complete aircraft identification.

**Example. —**

```
/B
FF CZYZZF
DTG KBUFYF
REQ ACP N711VR
(Enter key)
```

(2) If acknowledgment is not received within one hour after departure, use interphone or telephone to deliver. In any event, assure delivery prior to ETA.

(3) Refer to Section A of the Canada and North Atlantic IFR Supplements for Canadian FSS and ACC telephone numbers.

**g.** When correcting or revising a message, retransmit the complete message preceded by the contraction "CHG" (change).

**Example. —**

```
/B
FF CZYZZF
DTG KBUFYF
CHG VFR N711VR C182 BUF YYZ 1845 ADCUS4
(Enter key).
```

**h.** Do not transmit IFR flight notification messages except for military aircraft or customs notification purposes.

### 7-26. OUTBOUNDS TO CANADA DEPARTING FROM OUTSIDE FLIGHT PLAN AREA

**a.** Accept flight plans regardless of departure point. Forward flight plan information for aircraft proposing to depart from outside the facility's flight plan area to the tie-in FSS for the departure point.

(1) Identify the tie-in FSS and advise the pilot to report departure time directly to that facility.

**Note.—** While the report may be relayed through another facility, it is pilot responsibility to notify the tie-in FSS of departure time.

(2) Upon receipt of the departure report, the tie-in FSS is responsible for delivery of the flight notification message to Canada.

(3) If a departure report has not been received within one hour of the proposed departure time, cancel and file the proposed flight plan.

**b.** Forward VFR proposals to the tie-in FSS in the following format:

(1) Aircraft identification.

(2) Aircraft type.

(3) Departure point.

(4) Destination.

(5) Proposed departure time/ETE.

(6) Remarks.

**Example. —**

```
/B
FF KBUFYF
DTG KCLEYF
N711VR C182 BUF YYZ P1630/0030 ADCUS 2
(Enter key)
```

**c.** Forward IFR proposals as follows:

(1) If Customs flight notification service (ADCUS) is requested and available, include the tie-in FSS as an addressee on the proposal message transmitted to the ARTCC.

(a) Include ADCUS information as an intrafacility remark on the proposal message.

**Note.—** Enter ARTCC computer address last.

**Reference.—** Paragraph 6-12a(5)

**Example. —**

```
/B
FF KAGCYF KZOBZQ
DTG KDCAYF
DCA2010001 FP N1234P PA28/A 150 PIT P0200 150
PIT CIP DKK BUF YYZ/0130 ADCUS 4
(Enter key)
```

(2) If Customs notification is not requested, file the flight plan after transmission to the ARTCC.

**d.** Tie-in FSS acknowledgment is required for both VFR and IFR proposals.

### 7-27. IFR FLIGHT PLANS DEPARTING FROM CANADIAN AIRPORTS

**a.** Accept IFR flight plans departing from Canadian airports and destined to the U.S.

(1) Transmit a proposal message in ARTCC 9020 computer format to the associated Canadian ACC. The address consists of the ACC two-letter location identifier listed in Handbook 7350.5, Location Identifiers, prefixed by "CZ" and suffixed by "ZQ" (CZ. .ZQ).

**Reference.—** Paragraph 6-12c.

(2) If Customs flight notification service is requested and available, include "ADCUS," pilot's name, and number of persons on board with a notation of the number of non-U.S. citizens as an intrafacility remark.

**Note. —** When ADCUS information is included, Canada will transmit an IFR flight notification message to the appropriate U.S. FSS upon aircraft departure.

**Example. —**

```
/B
FF CZYZZQ
DTG KBUFYF
BUF1435009 FP N1234 CV58/D 280 YYZ P1800 100
YYZ V34 ROC/0030 ADCUS 5 JERRY BALL 2 NON
(Enter Key)
```

**b.** Canada does not acknowledge for proposal messages. Do not expect or request acknowledgment.

## 7-28. thru 7-39. RESERVED

## Section 3. MEXICAN MOVEMENT AND CONTROL MESSAGES

### 7-40. INBOUNDS FROM MEXICO

**a.** Acknowledge receipt of flight notification message as soon as practicable by transmitting the contraction "RFP" and the full aircraft identification, e.g. "RFP N1234X."

**b.** When Customs flight notification service is requested, as indicated by inclusion of "ADMISA" in remarks, deliver the complete message to the associated Customs office as soon as practicable.

(1) Provide the service only for those airports where availability is advertised in the Airport/Facility Directory. The pilot is responsible for making his own Customs arrangements for other airports.

(2) Notify only the Customs office which, in turn, is responsible for notifying other inspection agencies concerned.

**c.** Suspense VFR messages until arrival or closure information is received. File IFR messages after delivery to Customs.

### 7-41. FLIGHT PLAN/CUSTOMS REQUIREMENTS

Specific flight plan, Customs and other requirements of individual countries are listed in the FAA International Flight Information Manual (IFIM).

### 7-42. RECORDING TIME FILED

Record on the flight plan form the time that a flight plan is filed. This time will constitute evidence of the pilot's intention to comply with Customs, Immigration, and Public Health requirements and will be made available upon request from these authorities.

### 7-43. AIR-FILED FLIGHT PLANS

Accept air-filed flight plans or changes in destination information from aircraft inbound from foreign locations and, if requested by the pilot, enter Customs notification service.

### 7-44. FLIGHT PLAN CHANGES AND CANCELLATIONS

**a.** Assume departure station duties when a flight plan change is received from an aircraft en route to Mexico

**Reference.**— Paragraph 6-25/6-26.

**b.** An FSS receiving a VFR flight plan cancellation report from aircraft operating to Mexico shall transmit a cancellation message to the Mexican tie-in facility.

**Reference.**— Paragraph 6-27b.

### 7-45. MOVEMENT MESSAGES FROM UNITED STATES TO MEXICO

**a.** Mexico requires notification of an inbound aircraft before its arrival. Transmittal of a flight notification message with "ADMISA" (Advise Customs and Public Health Services) in remarks is one method of satisfying this requirement. When the ETE is less than one hour, the pilot should also notify Mexican officials directly.

**b.** Inform pilots (other than FAA flight inspection pilots) who file flight plans to Mexican destinations other than Airports of Entry that:

(1) Prior approval to land at a non-Airport of Entry is required by Mexican law.

(2) A flight notification message will not be transmitted to the destination airport, but only to Mexico City. Therefore, the flight plan will not be used for Customs nor search and rescue notification.

**Note.** — FAR 91.84 requires flight plans for all civil aircraft operating between the United States and Mexico. When the destination is other than an Airport of Entry, the pilot makes his own arrangements with Mexican officials.

**c.** Flight notification messages to Mexico shall be handled as follows:

(1) VFR flight notification messages shall be transmitted via the AFTN (Aeronautical Fixed Telecommunication Network) to the destination airport, and to the regional flight dispatch office for relay to destination (see Table 1). Border facilities that have interphone/telephone capability between the U.S. and Mexican border airports shall retain the option to relay by interphone/telephone the required flight notification information to the destination station only.

(2) The routing and addressing of a particular flight notification message shall be determined by referring to the listing in the Mexican section of the location identifier manual (7350.5). When addressing flight notification messages to Mexico, both the regional dispatch office and destination airports shall be addressed. Some locations operate on a part-time basis and others hours of operation are subject to change without notice. The appropriate flight dispatch office will assume the responsibility for flight notification messages when the destination facility is not operational.

(3) Table 1.

### Responsible Regional Flight Dispatch Offices

| Destination Airport | Dispatch Office |
|---|---|
| Acapulco (MMAA) | Mexico City |
| Cancun (MMUN) | Merida |
| Chetumal (MMCM) | Merida |
| Chihuahua (MMCU) | Monterrey |
| Ciudad Juarez (MMCS) | Monterrey |
| Cozumel (MMCZ) | Merida |
| Cuidad Acuna (MMCC) | Monterrey |
| Guadalajara (MMGL) | Mexico City |
| Guaymas (MMGM) | Mazatlan |
| Hermosilla (MMHO) | Mazatlan |
| LaPaz (MMLP) | Mazatlan |
| Loreto (MMLT) | Mazatlan |
| Manzanillo (MMZO) | Mexico City |
| Matamores (MMMA) | Monterrey |
| Mazatlan (MMZT) | Mazatlan |
| Merida (MMID) | Merida |
| Mexicali (MMML) | Mazatlan |
| Mexico City (MMMX) | Mexico City |
| Monterrey | |
| Mariano Escobedo (MMMY) | Monterrey |
| Del Norte (MMAN) | Monterrey |
| Nogales (MMNG) | Mazatlan |
| Nuevo Laredo (MMAN) | Monterrey |
| Piedras Negras (MMPG) | Monterrey |
| Puerto Vallarta (MMPR) | Mazatlan |
| Reynosa (MMRX) | Monterrey |
| San Jose Del Cabo (MMSD) | Mazatlan |
| Tampico (MMTM) | Mexico City |
| Tapachula (MMTP) | Merida |
| Tijuana (MMTJ) | Mazatlan |
| Torreon (MMTC) | Monterrey |
| Vera Cruz (MMVR) | Mexico City |
| Ixtapa Zihuatanejo (MMZH) | Mexico City |

**d.** A VFR flight and customs notification message shall consist of the following items:

(1) Aircraft identification.

(2) Aircraft type.

(3) Departure time.

(4) Departure point.

(5) Destination.

(6) ETE.

(7) Remarks:

(a) ADMISA, number of persons aboard and pilot's name (if customs notification requested).

(b) REQ ACK.

**e.** Upon receipt of a flight notification message that was transmitted via AFTN, the destination station in Mexico will send an acknowledgment message to the departure station in the United States.

**f.** If the departure station does not receive an acknowledgment within 30 minutes of the time of transmission of the flight notification message, it shall be retransmitted to the destination station and to the Flight Dispatch Office (OW) at the corresponding Regional Headquarters, Mexico (MMMXXMOW), Monterrey Mazatlan (MMMYXMOW), Merida (MMMDXMOW) or Mazatlan (MMMZXMOW). The Flight Dispatch Office involved will then send an acknowledgment to the departure station and assume responsibility for the flight notification message.

**g.** As some of the Mexican communications facilities operate on a part-time basis, do not request airborne search and rescue operations for overdue aircraft unless the destination facility confirms that the aircraft has not arrived or circumstances indicate that an aircraft accident may have occurred. The departure FSS shall make inquiries to the Mexican destination station and regional flight dispatch offices when an acknowledgement has not been received within two hours after the aircraft's ETA. If no reply is received within one hour after the inquiry is transmitted or if reply is negative, transmit a QALQ message to stations along the route within the U. S. However, apply the standard time increments for transmitting INREQ's and ALNOT's when definite knowledge indicates nonarrival of an aircraft and the location of the aircraft is definitely unknown. Maintain suspense files of all unclosed VFR flight plans until the aircraft is located, even though this may be for an indefinite period. If the aircraft is not located within the time specified in the Aircraft Accident and Incident Notification, Investigation, and Reporting Order, 8020.11, submit FAA Form 8020-9.

**h.** MMMXXMOW will be responsible for handling INCERFA, ALERFA and DETRESFA messages on aircraft from the U.S. inbound to Mexico.

## 7-46. MOVEMENT MESSAGES FROM MEXICO TO THE UNITED STATES

**a.** Upon receipt of a flight notification message that was received via AFTN, the destination station in the United States will send an acknowledgment message to the departure station in Mexico and to the Flight Dispatch Office at the Regional Headquarters.

**b.** The Departure station in Mexico is responsible for initiating any necessary SAR action until an acknowledgment of the flight notification message is received.

## 7-47. ROUND ROBIN FLIGHT TO MEXICO

In addition to accepting and transmitting a flight notification message to a Mexican Airport of Entry, accept a round robin flight plan for a stopover flight from your location to Mexico to your location. Emphasize to the pilot that he must close or have another FSS relay any change or closure of his round robin flight plan. Accept round robin flight plans when the stopover point is not an Airport of Entry, but transmit the flight notification message only to Mexico City. Exception: Do not transmit a flight notification message for those round robin flights that are known to possess authorization to commute to non-Airports of Entry, e.g., pilot lives in the U.S. but flies to business location in Mexico.

### 7-48. NOTICE OF INTENDED ARRIVAL ALONG U.S./MEXICO BORDER, THE GULF OF MEXICO, AND THE ATLANTIC COAST

**a.** Customs regulations require private aircraft arriving in the U.S. via U.S./Mexican Border, the Gulf of Mexico and the Atlantic Coast South of 31°North latitude must furnish a notice of intended arrival to Customs. This notice may be made anytime an aircraft is within the ADIZ but must be made at least 15 minutes prior to crossing the U.S. Coastline/Border. These aircraft are required to land at the designated airport nearest the crossing point.

**Note.** — The FAA role in this program is advisory only. Any appearance of action of enforcing compliance shall be avoided. Any questions should be directed to the U.S. Customs Service.

**Reference.** — 19 CFR, Part 6, Section 6.14 and 14 CFR Part 99.1, and 99.11.

**b.** FSS specialists shall apply the following procedures in dealing with these flights.

(1) Upon initial receipt of a notice of intended arrival from an aircraft arriving in the U.S. from Mexico, the Gulf of Mexico and the Atlantic Coast South of 31°North latitude FSS facilities shall pass the data to their associated Customs Office.

(2) When an airborne aircraft identifies an airport of first intended landing that is not one of the designated airports listed below, the FSS shall advise the pilot that this airport of intended landing is not a designated airport nearest the point of crossing the U.S. Border Coastline.

*Phraseology:*

BE ADVISED THAT YOUR DESTINATION IS NOT A U.S. CUSTOMS DESIGNATED FIRST LANDING AIRPORT.

(3) When a flight plan or flight notification message from any source affected by these procedures contains ADCUS and identifies an airport of first intended landing that is not a designated airport, the FSS shall notify the message originator to advise the pilot that the filed destination is not a designated airport.

**c.** The following are designated airports of first intended landing:

Beaumont, Texas—Jefferson County Arpt.;
Brownsville, Texas—Brownsville Intl. Arpt.;
Calexico, California—Calexico Intl. Arpt.;
Corpus Christi, Texas—Corpus Christi Intl. Arpt.;
Del Rio, Texas—Del Rio Intl. Arpt.;
Douglas, Arizona—Bisbee Douglas Intl. Arpt.;
Eagle Pass, Texas—Eagle Pass Arpt.;
El Paso, Texas—El Paso Intl. Arpt.;
Fort Lauderdale, Florida—Fort Lauderdale Intl. Arpt.;
Fort Lauderdale, Florida—Fort Lauderdale Exec. Arpt.;
Fort Pierce, Florida—St. Lucie Co, Intl. Arpt.;
Houston, Texas—Hobby Arpt.;
Key West, Florida—Key West Arpt.;
Laredo, Texas—Laredo Intl. Arpt.;
McAllen, Texas—Miller Intl. Arpt.;
Miami, Florida—Miami Intl. Arpt.;
Miami, Florida—OPA-Locka Arpt.;
New Orleans, Louisiana—Lakefront Airport
New Orleans, Louisiana—Moisant Arpt.;
Nogales, Arizona—Nogales Intl. Arpt.;
Presidio, Texas—Presidio-Lely Intl. Arpt.;
San Diego, California—Brown Field;
Tampa, Florida—Tampa Intl. Arpt.;
Tucson, Arizona—Tucson Intl. Arpt.;
West Palm Beach, Florida—West Palm Beach Arpt.;
Yuma, Arizona—Yuma Intl. Arpt.

### 7-49. thru 7-59. RESERVED

# Section 4. ICAO MOVEMENT AND CONTROL MESSAGES

## 7-60. TRANSMISSION VIA SERVICE B

**a.** International messages *(Alaska — Not Applicable)* will generally be introduced into the system by facilities on Service B originating messages requiring relay to the AFTN circuits or by the Kansas City IATSC in the relay of ICAO traffic from the AFTN to the domestic B system. Handle these messages as follows:

(1) International messages originated by a facility on Service B for relay to AFTN via Kansas City IATSC.

(a) Start of message /B new line key

(b) Preamble (originator, space, priority, space, addressee(s) ).

(i) Originator — three character domestic identifier.

(ii) Priority — two character precedence field.

(iii) Addressee(s) — not to exceed sixty-nine characters, or nine addressees. Each addressee separated by a space.

(c) End of Line (EOL) new line key

(d) End of Text (EOT) Enter key

## 7-61. ORIGINATING AND ADDRESSING OF MESSAGES

**a.** Messages for ATS purposes may be originated with ATS units by aircraft in flight, or, through local arrangements, a pilot, the operator, or his designated representative.

**b.** Aircraft movement, control, and flight information messages for purposes other than ATS; e.g., operational control, shall be originated by the pilot, the operator, or their designated representative.

**c.** The aircraft operating agency or serving company flight planning office is responsible for correct formatting and addressing of all FPLs when the information is by direct input to the AFTN. When FPLs are filed through ATS units, aircraft operating agencies or serving companies are responsible for providing all required information and identifying ATS units will be responsible for formatting and message transmission.

**d.** Address IFR FPL messages to the ARTCC serving the airport of departure and to all ATS units (including oceanic) providing air traffic control service or concerned with flight along part or the whole of the route to be flown except FAA ATCTs and other conterminous U.S. ARTCC's. If more than one message is necessary to accomplish distribution, the ARTCC serving the airport of departure must be addressed in each message.

**Note.** — Within the NAT Region, FPLs on turbojet aircraft transiting the control areas of Gander Oceanic, New York Oceanic, Reykjavik, Santa Maria Oceanic, Shanwick Oceanic and /Sondrestrom (south of 70 degrees) within 90 nautical miles of the control area boundary, shall be addressed to the adjacent ACC to provide lateral separation. For all other aircraft, a 120 nautical mile proximity limit shall apply.

**e.** Transmit all IFR FPLs to ARTCC's not less than one hour prior to the proposed departure time. Do not hold FPLs until after departure time and transmit as a combined FPL and DEP. Separate FPL and DEP messages must be transmitted.

**f.** Address aircraft movement messages only to those ATS units responsible for the provision of relevant service, except that when so requested by the operator concerned, these messages, when transmitted via the AFTN, may also be routed, as specified by the operator or his representative to:

(1) One addressee at the point of intended landing or point of departure; and

(2) Not more than two operational control units concerned.

**g.** The ARTCC serving the departure airport shall transmit the departure message (DEP) on IFR aircraft to all known recipients of the FPL message. Flights between conterminous U.S. and Canada (excluding Gander Oceanic), Alaska, Hawaii and Puerto Rico do not require DEP messages. Discontinuance of DEP messages affecting the route of flight can only be accomplished by ICAO Regional Air Navigation Agreement.

## 7-62. CATEGORIES OF MESSAGES

The following ATS messages, with their normal priority indicators, are authorized for transmission by any means; i.e., AFTN, Service B, interphone, computer-to-computer, or via the aeronautical mobile service, as applicable.

**a.** Emergency messages comprising:

(1) Distress messages and distress traffic, including alerting (ALR) messages relating to distress (DETRESFA) phase; SS.

(2) Urgency messages, including alerting messages relating to an alert (ALERFA) phase, or to an uncertainty (INCERFA) phase; SS.

(3) Other messages concerning known or suspected emergencies which do not fall under 1 and 2 above, and radio communications failure (RCF) messages; FF or higher as required.

**b.** Movement and control messages comprising:

(1) Flight plan (FPL); FF.

(2) Amendment and coordination messages:

(a) Departure (DEP); FF.

(b) Delay (DLA); GG.

(c) Arrival (ARR); GG.

(d) Boundary estimate (EST); FF*

(e) Modification (CHG); FF*

(f) Coordination (CDN); FF*

(g) Acceptance (ACP); FF.*

(3) Cancellation (CNL); GG.*

(4) Clearances, flow control (SPL, CHG, CDN); FF or DD.*

(5) Transfer of control (TCX); FF.*

(6) Requests (RQS); FF.*

(7) Position reports (AIREP); FF.*

**c.** Flight information messages comprising:

(1) Traffic information; FF.*

(2) Meteorological information (MET); FF, GG.

(3) Operation of aeronautical facilities and essential airport information (NOTAM); GG.

*Normally exchanged between ATC units via speech circuits.

**d.** Technical messages. Four categories of these messages are specified for use on computer-to-computer circuits only. They will not be sent on AFTN or Service B circuits.

## 7-63. MESSAGE PRECEDENCE

**a.** These messages concern the safety of a ship, aircraft or other vehicles or of some person on board or within sight.

(1) The originator of an SS message shall use the priority alarm signal following the originator indicator.

**Example.**

```
/B
SS KZOAZR
210754 PHZHZR
JJJJJSSSSS
(text)
(Enter key)
```

(2) The AFTN destination station shall acknowledge immediately to the originating stations. The acknowledgment shall be a complete message using the priority alarm signal.

**Example. —**

```
/B
SS PHZHZR
210756 KZOAZR JJJJJSSSSS
R 210754 PHZHZR
(Enter key)
```

(3) Facilities receiving via Service B for themselves or a facility they guard for, shall acknowledge in the same manner as subparagraph 7-63a.(2), above.

**b.** When justified by the requirements for special handling, the precedence DD may be assigned in place of the normal precedence. Messages should be assigned a lower precedence if this lower precedence will serve the intended purpose.

## 7-64. SERVICE MESSAGES

**a.** Kansas City IATSC (KMKM) will immediately generate a service message to an originator when incorrect code or routing indicators are detected in the message address.

**Example. —**

```
/B
FF KZKCZQ
031840 KMKMYT
SVC. ZKC121 QTA RPT
(Enter key)
```

**Example. —**

```
/B
FF KZKCZQ
031840 KMKMYT
SVC. ZKC122 QTA MSR
(Enter key)
```

**Note. —** Automatic Service Messages to ARTCC subscribers only.

**b.** Assign the appropriate priority indicator to international service messages. When service messages refer to messages previously transmitted, assign the same priority prefix. Identify a service message by inserting "SVC" as the first item of the text.

**Example. —**

```
/B
FF MJSJYF
DTG KSEAYF
(Enter key)
```

## 7-65. FLIGHT PLAN FORMS AND INSTRUCTIONS

**a.** Use the International Flight Plan, FAA Form 7233-4 (See Appendix B) or ICAO Model Flight Plan Form displayed in DOC 4444, and apply the procedures set forth in this section for flight:

(1) Originating within conterminous U.S. and Canada and destined non-stop to points beyond those areas.

(2) Originating within or transiting Pacific Flight Information Regions (FIRs) and destined to or from FIRs beyond the Pacific Region, including the NAM Region.

**Note 1.—** The NAM Region encompasses the conterminous U.S., Alaska and Canada to the North Pole.

**Note 2.—** FAA Form 7233-1, or Military Form DD-175, and domestic procedures are used for flights in the conterminous U.S., Canada, and the Honolulu, Alaskan and San Juan domestic control areas.

**b.** Complete the shaded areas of the first two lines of the flight plan form when it is handed in or filed. Fill in the specific addressees and originator identification only as required. Symbols on the form are to facilitate transmission and are described as follows:

(1) Alignment function — New line key.

(2) Start-of-ATS-data signal—open parenthesis.

(3) Start-of-field signal—

(4) Small letter "s"—indicates space.

(5) End-of-ATS-data signal—close parenthesis.

## 7-66. AIR TRAFFIC SERVICE (ATS) MESSAGES

ATS as used in this section, as opposed to the meaning of the term within the FAA, is a generic term meaning, and including: Flight information; alerting; air traffic advisory; and air traffic control (ATC) services. "ATC" includes Air Traffic Control Center (ARTCC), Area Control Center (ACC), Approach Control (AC), and/or Airport Control Tower (APCT/TWR).

## 7-67. TRANSMISSION OF ATS MESSAGES

**a.** Air traffic service messages are interchanged in the international air traffic control system in the following modes:

(1) The preferred "step-by-step" mode, wherein each ACC/ARTCC sends forward, as the flight progresses, full current (updated) flight plan information.

(2) The "simultaneous" mode, wherein information extracted from the filed flight plan (FPL) is sent simultaneously to all ATS units along the route of flight; in this mode, only amendments to the FPL, plus necessary control information, are forwarded from center to center as the flight progresses.

**b.** Prepare and transmit ATS messages as set forth in this handbook. Address these messages as follows:

(1) Include one 6 or 8 character addressee indicator for each addressee. There can be no more than one line (69 characters including separating spaces) of addressees. When more than the allowable number of addressees are required, two or more transmissions of the message, each with no more than the allowable number of addresses, must be made. The 6 or 8 letter combination addressee indicators are composed as follows:

(a) The four-letter ICAO location indicator; e.g., MBLB. Use only those listed in ICAO DOC 7910 (Location Indicators). Do not use international location identifiers from the list in FAA Handbook 7350.5.

(b) A 2-letter designator for the authority, service or operator, or if no designator has been assigned, afix "YX" for military, "ZZ" for aircraft in flight, or "YY" for all other cases; e.g., MTPPYY. (Ref ICAO DOC 8505, Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services)

**Note.** — The most frequently used and authorized designators are:

YA — Government Civil Aviation Authority(FAA)

YC — Rescue Coordination Center (RCC)

YD — Authority Supervising the Aerodrome

YF — Aeronautical Fixed Station (FSS/IFSS/IATSC)

YM — Meteorological Office (NWS)

YN — International NOTAM Office (NOF)

YT — Telecommunications Authority

YW — Military Flight Operational Control Center (ACP)

YX — Military Organization (BASOPS)

YY — Organization not allocated a 2 — letter designator

ZF — Center in charge of a FIR/UIR when the message is relevant to a VFR flight (AMIS)

ZO — Oceanic Air Traffic Control Center

ZP — Air Traffic Service Reporting Office

ZQ — Computer Facility at ACC/ARTCC

ZR — ACC/ARTCC

ZT — Aerodrome Control Tower

ZZ — Aircraft in flight

(c) A 2-letter designator may appear following an air carrier designator to indicate the department or division of the organization addressed.

(2) Filing time. A 6-digit date/time group indicating the time the message is filed with the FSS/IFSS for transmission.

**c.** Originator indicator. Consists of a 6- or 8-letter sequence similar to an Address Indicator, identifying the place of origin and the organization originating the message.

**d.** Supplementary address and origin information. When the 2-letter designators "YX" "ZZ," or "YY" are used, identify the aircraft operator or organization at the beginning of the text preceding the start-of-ATS data symbol (←), in the same order as in the addressee(s) and/or originator indicator(s). Where there is more than one such insertion, the last should be followed by the word "stop." Where there are one or more insertions in respect of Addressee Indicators plus an insertion in respect of the Originator Indicator the word

"FROM" is to appear before that relating to the originator.

**e.** When addressing Flight Plan Messages, Amendment Messages relating thereto and Flight Plan cancellation messages to centers use one of the 2- letter designators as follows:

(1) If message is relevant to IFR and:

(a) The center is computer equipped (U.S. ARTCC's) use ZQ.

(b) The center is not computer equipped, use ZR.

(c) Relevant to oceanic operations, use ZO.

**Note.**— Some centers may request specific addressing different from above. ZT and ZP are used internationally but are not used in internal U.S. application.

(2) If message is VFR (AMIS), use ZF.

(3) If SVC or administrative, use ZR.

## 7-68. ICAO ATS MESSAGES FORMAT

The following are examples of ICAO message types most likely to appear on AFTN/Service B circuits. The number above the data corresponds to the field type numbers on the flight plan form (FAA Form 7233-4) and on the chart of "Standard ATS Messages and Their Composition (**7110.80 Appendix B**)."

**a.** Departure Message (DEP). ARTCC's are the designated ATS unit responsible for originating and transmitting DEP messages on all IFR aircraft departing airports within their center boundaries. IFR flight plans must be transmitted to ARTCC's at least one hour before departure. This allows ARTCC's to determine recipients of DEP message when domestic portions are transmitted to ARTCC's in model 3 format. Do not hold FPLs and combine with DEP into a single message.

**b.** Delay Message (DLA). Transmitted when departure of an aircraft, for which an FPL message has been transmitted, is postponed or delayed more than 30 minutes after the estimated time of departure contained in the FPL.

**c.** Alerting Message (ALR). Relating to an overdue situation on an aircraft.

**d.** Supplementary Flight Plan (SPL) information shall be sent to ATS units requesting the information (RQS).

**e.** Arrival Message (ARR). Sent only on Canadian MOT, U. S. DOT or FAA aircraft, or upon request.

**f.** Current Flight Plan (CPL) Messages. Originated by and transmitted in a step-by-step mode between successive ACC's and between the last ACC to the control at the airport of intended landing. CPLs contain only information relevant to that portion of the route of flight which extends from the point of entry into the next control area or FIR to the airport of intended landing.

**g.** Acceptance (ACP) Messages. Transmitted when the data contained in a CPL message are found to be acceptable to the receiving ACC.

**h.** Flight Plan Cancellation (CNL) Messages. Transmitted when a current (CPL) or filed flight plan (FPL) message was transmitted and the flight is cancelled.

## 7-69. AIR MOBILE SERVICE (AMS)

**a.** For maximum communications efficiency of a network, the individual networks are limited geographically to areas permitting effective coordination and cooperation between ground stations.

**b.** For any individual route segment, the AMS communication requirements will normally be met by two or more network stations serving the flights on that route segment. In general these primary stations serve the ACC serving the FIRs and the points of take-off and landing. In some cases, additional suitably located stations are required to complete the communications coverage.

**c.** Each of these stations may be required at some stage of the flight to exchange communications with the aircraft and, when not so engaged, to intercept as required communications exchanged between the aircraft and any one of the other stations.

**d.** The stations serving the ACC's providing regular network service to aircraft operating over route segments in that ACC's FIR are termed regular stations. Other stations of the network will be required only to assist communications for that FIR in the event of communications difficulties.

**e.** Whenever communications conditions permit, aircraft should transmit their messages to the primary station of the network from which they can be most readily delivered to their ultimate destinations. In particular, aircraft reports required by ATC should be transmitted to the network station serving the ATC center in whose area the aircraft is flying. Conversely, messages to aircraft in flight should be transmitted direct to the aircraft by the network station serving the location of the originator.

**f.** Messages passed from aircraft to a network station should be intercepted and acknowledged by other stations which serve locations where the information is also required. Such intercepts provide instantaneous delivery of information and eliminates the transmission of messages over the AFTN. Networks may not be used for transmission of aircraft reports except under the intercept principle. Acknowledgments of intercept shall be made immediately after the acknowledgment of receipt by the station to which the message was passed. In the absence of acknowledgment of intercept within one minute, the station accepting the message from the aircraft shall forward the message via the AFTN to the ultimate destinations.

**g.** In areas or on routes where radio conditions, length of flights, or distance between stations require additional measures to ensure continuity of communications throughout the route segment, the stations shall share the responsibility of primary guard whereby each station will provide the primary guard for that portion of the flight during which the messages from the aircraft can be handled most effectively by that station.

**h.** During its tenure of primary guard, each station will:

(1) Be responsible for designating primary and secondary frequencies for communications with aircraft.

(2) Receive all position reports and handle other messages from and to the aircraft essential to the safe conduct of the flight.

(3) Be responsible for the action required in case of failure of communication.

**i.** Transfer of primary guard from one primary station to the next will normally take place at the time of traversing FIR or control area boundaries. When communications conditions so demand, a station may be required to retain primary guard beyond geographical boundaries or release its guard before the aircraft reaches the boundary.

## 7-70. AIREPS (POSITION REPORTS)

**a.** When recording an AIREP on data terminal or written copy, the following procedure shall be used:

(1) Each line shall begin at the left margin.

(2) A new line shall be used for each transmission.

(3) Each communication shall contain as much as possible or all of the following items in the order shown:

(a) Message type ARP.

(b) Call sign of the calling station (aircraft).

(c) Text of message.

(d) Call sign of the station called or receiving station, followed by the appropriate abbreviation to indicate "received", "readback", or "no reply heard."

(e) Call sign of station (s) acknowledging intercept followed by appropriate abbreviation to indicate "received".

(f) Designation of frequency used (see note).

(g) Time in UTC of the communication.

(4) Missing parts of the message text shall be indicated by the letter M.

**Note.** — Two letter frequency designators:

2932 QI
2998 QL
*2866 QM
5628 TO
*5631 TY
6532 UA
8903 VO
10048 WH
11384 XM
13294 YF
13300 YH
17904 ZC

*For Alaskan domestic use only.

**Example.** —

ARP CP583 KBRO 2100 F330 MMTM 2128 ETA XMMMX 2248 FUEL 0324
KNEW RB
MMMX R
TM2103

**b.** AIREPs may be filed from any aircraft in flight within WMO areas of responsibility in conformity with ICAO requirements for position, operational or meteorological reporting in AIREP format. AIREP information shall be disseminated to ATC, company, and meteorological offices as required. AIREPs consist of 3 sections comprised of 12 items. AIREPs may be filed in one, two, or three sections as follows:

(1) Section 1. Routine report — A position report (PSNRP) comprising the following items:

(a) Message Type Designator — ARP

*Item 1.* Aircraft Identification.

*Item 2.* Position. Record position in latitude (degrees as 2 numerics or degrees and minutes as 4 numerics, followed without a space by N or S) and longitude (degrees as 3 numerics or degrees and minutes as 5 numerics, followed without a space by E or W) or as a significant point identified by a coded designator (2 to 5 characters) or as a significant point followed by a magnetic bearing (3 numerics) and a distance in nautical miles (3 numerics) from the point (e.g. 4620N07805W, 4620N078W, 46N078W, LN, MAY or DUB180040). Precede significant point by ABM (ABEAM), if applicable.

*Item 3.* Time. Record time in hours and minutes UTC (4 numerics). The time recorded must be the actual time of the aircraft at the position and not the time of origination or transmission of the report.

*Item 4.* Flight Level or Altitude. Record flight level as F followed by 3 numerics (e.g. F370) when on standard pressure altimeter setting. Record altitude in meters followed by M or in feet followed by FT, when QNH, record ASC (level) when climbing, or DES (level) when descending to a new level after passing the significant point.

*Item 5.* Next position and Time Over. Record the next reporting point and the estimated time over such reporting point, or record the estimated position that will be reached one hour later, according to the position reporting procedures in force. Use the data conventions specified in Item 2 for position. Record time in minutes past the hour (2 numerics) or in hours and minutes UTC (4 numerics) when necessary.

**Example.** — (PSNRP portion of AIREP prepared by New Orleans and addressed to Toronto and Mexico City, Canadian Pacific Airlines (CP)).

/B
FF CYYZCP MMMXCP
122105 KNEWYF
ARP CP583KBRO 2100 F370 MMTM28
KNEW RB
MMMM R
TM2103
(Enter key)

(2) Section 2. When reported by the pilot, comprising:

*Item 6.* Estimated Time of Arrival (ETA). Record ETA by the four letter location indicator of the airport of first intended landing or, if no location indicator exists, the name of the airport, followed by the estimated time of arrival at this aerodrome in hours and minutes UTC (4 numerics).

*Item 7.* Endurance. Record fuel in hours and minutes (4 numerics).

**Example.** — (AIREP comprised of PSNRP, and aircraft operator information)

/B
FF CYYZCP MMMZCP
122105 KNEWYF
ARP CP583KBRO 2100 F370 MMTM28
MMMX 2248 FUEL0324
KNEW RB
MMMX R
TM2103
(Enter key)

(3) Section 3. A full AIREP comprising a PSNRP, company information, and enroute meteorological information.

*Item 8.* Air Temperature. Record PS (plus) or MS (minus) followed, without a space, by the temperature in degrees centigrade, corrected for instrument error and airspeed (e.g. MS05).

*Item 9.* Spot Wind or Mean Wind and Position Thereof. Spot wind is used whenever practicable. Spot wind normally refers to the position given in (Item 2). When a spot wind is given for any other location, record its position. Whenever it is not practicable to record spot wind, record the mean wind between two fixes. Followed by the word "mean" and the position of the mid-point between the two fixes. Record wind direction in degrees true (3 numerics) and wind speed in knots (2 or 3 numerics), separated by an oblique stroke (e.g., 345/55). Record the direction of variable winds of a given strength as "VRB" (e.g. VRB/10). Record light and variable winds or calm as "LV." If wind position is required, record latitude and longitude to the nearest whole degree, using the data convention specified for (Item 2) (e.g., 22N180W).

*Item 10.* Turbulence (TURB). Record severe turbulence as TURB SEV and moderate turbulence as TURB MOD. If turbulence is experienced in cloud add INC (in cloud). If in subsonic flight report severe turbulence as soon as possible after occurrence. This requires AIREP SPECIAL. Record and report moderate turbulence only if encountered within last 10 minutes prior to reaching position in Item 2. If in transonic or supersonic flight, report severe or moderate turbulence as soon as possible after occurrence. This requires AIREP SPECIAL.

*Item 11.* ICING. Record severe icing as ICE SEV, moderate icing as ICE MOD. Report severe icing as soon as possible after occurrence. This requires AIREP SPECIAL. Record and report moderate icing only if encountered within last 10 minutes prior to reaching position Item 2.

*Item 12.* Supplementary Information. Recorded data which in the opinion of the pilot-in-command are of aeronautical interest.

(a) Present weather: Rain (RA); Snow (SN); Freezing rain (FZRA); Funnel cloud (FA) (waterspout or tornado); Thunderstorm (TS) on or near flight path; Front (FRONT).

(b) Clouds: If heights of cloud bases and/or tops can be accurately ascertained; amount of clouds scattered (SCT) if clear intervals predominate, broken (BKN) if cloud masses predominate, or continuous (CNS), type of clouds only if cumulonimbus (CB) and indication of bases (BASE) and/or tops (TOP) together with the respective height indication F (number) or (number) or (number) M/or (number) FT.

(c) Turbulence and Icing: Moderate turbulence (TURB MOD), if in subsonic flight, or moderate aircraft icing (ICE MOD), observed prior to the last 10 minutes.

(d) D-Value: Reading or radio altimeter minus reading of pressure altimeter set to 1013.2 mb and corrected for calibration and position error; record differences as PS (plus) or MS

(Minus) followed without a space, by the number of meters or feet.

(e) Operationally significant weather radar echoes (echo or echo line). True bearing of center of echo or line and distance from aircraft in nautical miles; if appropriate, indicate weather intensifying or weakening and whether no gaps, some gaps or frequent gaps are observed.

(f) Significant differences between conditions encountered and those forecast for the flight, e.g. forecast thunderstorms not observed or freezing rain not forecast.

(g) If the position of the phenomenon reported is not the same as the position given under Item 2, report it after the phenomenon.

**Example.—** (full AIREP)

/B
FF CYYZCP MMMXCP KMIAYM
162215 MJSJYF
ARP CP5832709N05415W 2212 F330
23N056W 59 0035 FUEL 0324 M534 310/60
MEAN 2543N05532W TURB MOD ICE MOD SCT
CB TOP F280
MJSJ RB
TM2214
(Enter key)

**Note.** — Transmit to WMO office serving FIR where report is made.

## 7-71. AIREP SPECIAL (ARS)

**a.** Turbulence — SEV TURB encountered while in subsonic flight is reported as soon as possible after occurrence and requires AIREP SPECIAL. MOD TURB is reported only if encountered within 10 minutes prior to reaching reporting position. If in transonic or supersonic flight MOD and SEV TURB is reported as soon as possible and requires AIREP SPECIAL.

**b.** ICING — SEV ICE is reported as soon as possible after occurrence and requires AIREP SPECIAL. MOD ICE is reported only if encountered within last 10 minutes prior to reaching reporting position.

**Example. —**

/B
FF KMIAYM
211538 MJSJYF
ARS PA101 5045N02015W 1536 F310 ASC F350
51N030W 21 FUEL 0900 ICE SEV
(Enter key)

[illegible]

[illegible]

# Chapter 8. SEARCH AND RESCUE (SAR) PROCEDURES FOR VFR AIRCRAFT

## Section 1. GENERAL

### 8-1. RESPONSIBILITY FOR SAR ACTION

The departure station is responsible for SAR action until receipt of the destination station's acknowledgment for the flight notification message. This responsibility is then transferred to the destination station.

### 8-2. OVERDUE AIRCRAFT ON FLIGHT PLAN

Consider an aircraft on a VFR or DVFR flight plan overdue when it fails to arrive 30 minutes after its ETA and communications or location cannot be established.

### 8-3. OVERDUE AIRCRAFT NOT ON FLIGHT PLAN

Consider an aircraft not on a flight plan as overdue at the actual time a reliable source reports it to be at least one hour late at destination. Based on this overdue time, apply the same procedures and action times as for aircraft on a flight plan. (Reference paragraph 8-10, 8-20, 8-30). When such a report is received, verify (if possible) that the aircraft actually departed and that the request is for a missing aircraft rather than a person. Refer missing person reports to the appropriate authorities.

### 8-4. thru 8-9. RESERVED

## Section 2. OVERDUE AIRCRAFT ACTION

### 8-10. INITIAL ACTION/QAL

**a.** As soon as a VFR aircraft (military or civil) becomes overdue, the destination station (including intermediate destination tie-in station for military aircraft) shall attempt to locate the aircraft by checking all adjacent flight plan area airports. Also check appropriate terminal area facilities and ARTCC sectors (through Area Managers). If this communications search does not locate the aircraft, transmit the signal "QALQ" to the departure station and, when different, also to the FSS with which the flight plan was filed.

**Examples. —**

```
/B
FF KMEMYF
DTG KSPSYF
QALQ N12345
(Enter key)
/B
FF KMEMYF
DTG KSPSYF
QALQ N12345 FPNO
(Enter key)
```

**Note.** —If it is determined by the flight service specialist that the local field search cannot be completed before the INREQ transmission time, the QALQ shall be transmitted in time to receive the information for the INREQ message. The local field search shall continue without reference to time until completed.

**b.** Use of long distance telephone in carrying out SAR responsibilities is authorized when appropriate.

**c.** In the case of a U.S. registered aircraft, or any aircraft known to be piloted by or transporting U.S. citizens and en route within a foreign country or between two foreign countries, if the overdue report is received either from someone directly concerned or from aviation authorities of a foreign country, notify the Washington Communications Control Center immediately via Service B message addressed to RWA.

**d.** *Alaska*—In addition to a. and c. above, address QALQ, INREQ, or ALNOT messages and replies to PANCYA and PAEDYC.

**Note.** —RCCs other than Elmendorf (PAEDYC) are not on Service B and must be notified by telephone.

**e.** Upon receipt of a QALQ message from the destination station concerning a flight for which a proposed flight plan was transmitted, the station which transmitted the proposal shall immediately transmit a message to the destination station containing all information not previously sent. No further search action is required of the station which transmitted the proposal and no further messages will be received by this facility unless the search area extends into its flight plan area.

**Reference.—** Paragraph 8-11b.

### 8-11. ACTION BY DEPARTURE STATION ON RECEIPT OF QALQ

Upon receipt of the QALQ inquiry, the departure station shall check locally for any information about the aircraft, and take the following action:

**a.** If the aircraft is located, notify the destination station.

**Example. —**

```
/B
FF KMEMYF
DTG KSPSYF
QALQ N12345 QAL 1255
(Enter key)
```

**Note.** —In the case above, the destination station would close the file on N12345.

**b.** If unable to obtain additional information, transmit a message to the destination station containing all information not previously sent. Include any verbal or written remarks made by the pilot which may be pertinent to the search.

**Example. —**

```
/B
FF KSPSYF
DTG KMEMYF
QALG N12345 C150/X TAS 110 D1235 MEM 85 PBF
ADM SPS FEXHA 1635 JOHN HUNTER 2101 SIOUX
DRIVE CDS 2 POB BLUE WITH RED TRIM
(Enter key)
```

### 8-12. CANCELLATION OF THE QALQ

If the aircraft is located by the destination station after the QALQ signal is sent, transmit a cancellation message addressed to all recepients of the QALQ.

**Example. —**

```
/B
FF KMEMYF
DTG KSPSYF
QALQ N12345 CNLD
(Enter key)
```

### 8-13. thru 8-19. RESERVED

## Section 3. INFORMATION REQUESTS (INREQ)

### 8-20. INREQ

If the reply to the QALQ is negative, or if the aircraft has not been located within 30 minutes after it becomes overdue:

**a.**The destination station shall transmit a numbered INREQ message to the departure station, flight watch control stations with communication outlets along the route, other FSSs along the route, ARTCCs along the route, and RCC.

(1) If these stations are within 50 miles of the Great Lakes, also transmit the INREQ to the Cleveland FSS.

(2) *Pacific*—Hawaii station's shall give preliminary notification to Honolulu SARCC as follows:

(a) Hilo by long distance telephone.

(b) Honolulu FSS shall use local telephone.

(c) Secondary means for Hilo shall be Service B to Honolulu FSS and thence by telephone between Honolulu FSS and the SARCC.

**b.** Include all information in the INREQ message that will assist in search activities.

**Note 1.** — The National Search and Rescue Plan is outlined in the AIM.

**Examples.** —

```
/B
DD (appropriate six character identifiers) INCLUDE
KRCCYC
DTG KLOUYF
LOU001 (appropriate three character identifiers)
INREQ N12345 BE55/T TAS 170 D1230 CGX 95 DR
LOU FEXHA 1730 PILOT HARRY ADAMS 2345 10TH
ST BNA FONE 615-123-4567 4 POB BLUE AND WHITE
(any other information available)
(Enter key)
/B
DD (appropriate six character identifiers) INCLUDE
KRCCYC
DTG KCECYF
CEC002 (appropriate three character identifiers)
INREQ N1234B C182/X OAK CEC PILOT LEROY
ROACHE 118 MAIN ST CEC WIFE REPORTS ETA
1230
(Enter key)
```

**c.** RCC does not have transmit capability. Acknowledgment is not required for messages to RCC.

### 8-21. ACTION UPON RECEIPT OF INREQ

Stations receiving an INREQ shall take the following action:

**a.** En route stations—Seek information about the aircraft by checking facility records and by checking all flight plan area airports along the proposed route of flight. Deliver to associated terminal area facilities. Reply to the INREQ within one hour. If unable to complete the search within one hour, forward a status report, followed by a final report when the search is completed. If the reply contains pertinent information (e.g., aircraft location or position report), transmit it to the originator by numbered message and activate printers of all INREQ addressees.

**Note.** —Upon receipt of INREQs and ALNOTs, terminal area facilities and ARTCCs are required to check facility records, report findings to FSS who alerted them within one hour, and retain in an active status until cancelled.

**Reference.**— Order 7110.65 paragraph 9-18.

**b.** Departure station—Hold the INREQ message in suspense.

**c.** Tie-in station—Cleveland FSS, when an addressee, shall notify Cleveland U.S. Coast Guard RCC.

**d.** *Pacific*—Hawaiian stations, notify Honolulu SARCC by telephone direct.

**Examples.** —

```
/B
DD KLOUYF
DTG KLAFYF
INREQ N1234A NEG INFO
(Enter key)
/B
DD (appropriate six letter identifiers) INCLUDE
KRCCYC
DTG KHUFYF
HUF007 (appropriate three character identifiers)
INREQ N1234A OVR HUF 1355 NO OTHER INFO
(Enter key)
```

### 8-22. CANCELLATION OF INREQ

The INREQ originator shall transmit a numbered message containing the location of the aircraft to all INREQ addressees when the aircraft is located. Notify associated terminal area facilities.

**Example. —**

/B
DD (appropriate six character identifiers) INCLUDE KRCCYC
DTG KLOUYF
LOU003 (appropriate three character identifiers)
INREQ N1234A CNLD. LCTD BMG
(Enter key)

## 8-23. thru 8-29. RESERVED

# Section 4. ALERT NOTICES (ALNOT)

## 8-30. ALNOT

If the replies to the INREQ are negative, or if the aircraft is not located within one hour after transmission of the INREQ, whichever occurs first, the destination station shall transmit an ALNOT.

**a.** Address ALNOT messages to all Service B circuits serving the ALNOT search area, to your Regional Operations Center (ROC) and to RCC. If the search area is within 50 miles of the Great Lakes, also address to Cleveland FSS, which notifies the Cleveland RCC. The search area is normally that area extending 50 miles on either side of the proposed route of flight from the last reported position to the destination. However, if requested by the RCC, or at the discretion of the destination station, the ALNOT search area may be expanded to the maximum range of the aircraft.

**Note.** —Automated FSSs require specific addressing.

**b.** *Alaska*—Address to PANCYG. (Only FSSs in the ALNOT search area are required to acknowledge.)

**c.** Include all information in the ALNOT message that will assist in search activities (same as INREQ plus any additional information received).

**Example.** —

/B
SS (appropriate ARTCC circuit codes, other addresses as identified in a above) INCLUDE KRCCYC
DTG KORLYF
ALNOT N1513B C182/D TAS 150 D1840 DCA 85 DR ORL OVR RMT 2005 FEXHA 2310 PILOT GENE HIGGINS 5233 10TH ST DCA FONE 202 426-8802 2 POB RED WITH WHITE TRIM (any other information available)
(Enter key)

**d.** Ten minutes after issuance of the ALNOT call Scott AFB to assure delivery of the ALNOT and to answer any inquiries.

**Note.** — RCC (Scott AFB) phone numbers are: FTS (direct) 618-256-4815, (Scott AFB operator) 255-1110-(switchboard) ask for extension 130; Commercial 618-256-4815, 800-851-3051.

## 8-31. ACTION UPON RECEIPT OF ALNOT

Upon receipt of an ALNOT, each station whose flight plan area extends into the ALNOT search area shall:

**a.** Immediately conduct a communications search of those flight plan area airports which could accommodate the aircraft and which were not checked during the INREQ search. Deliver to associated terminal area facilities. Request appropriate law enforcement agency to check airports which cannot be contacted otherwise.

**b.** Within one hour after receipt of the ALNOT, notify the originator of the results or status of the communications search. If the reply contains pertinent information (e.g., aircraft location or position report), transmit it to the originator by numbered message and activate printers of all ALNOT addressees.

**Examples.** —

/B
SS KORLYF
DTG KSAVYF
ALNOT N1513B FLD CK COMPLT NEG INFO
(Enter key)
/B
SS (appropriate ARTCC circuit codes, other addresses as identified in paragraph 8-30a) INCLUDE KRCCYC
DTG KJAXYF
JAX004 (appropriate three character identifier)
ALNOT N1513B ACFT LCTD OG JAX
(Enter key)

**c.** Stations within the ALNOT search area shall broadcast the ALNOT as follows:

(1) Immediately after receipt.

(2) *Alaska*—Following opening announcement in the SWB, request pilots to standby for the ALNOT.

**Phraseology.** —

"ALERT NOTICE, ATTENTION ALL PILOTS, STAND BY FOR AN ANNOUNCEMENT OF OVERDUE AIRCRAFT AT CONCLUSION OF THIS BROADCAST."

(3) Transmit at H +15 for two hours following receipt. If the ALNOT is received during night hours, repeat the announcement at H +15 for 2 hours following sunrise.

**Example.** —

"Alert Notice. Twin Cessna Two Two Tango departed Rock Springs along Victor Six and Thirty-two to Salt Lake City. Color red. This aircraft overdue; if sighted, inform nearest Flight Service Station.

**d.** Request search assistance from aircraft traversing the search area. If the overdue aircraft is equipped with an emergency locator transmitter, include in the broadcast a request for aircraft to monitor 121.5 MHz.

**Example.** —

"Aircraft is equipped with emergency locator transmitter. All aircraft are requested to listen on 121.5 MHz for beacon transmission."

## 8-32. REPORTING ALNOT STATUS TO RCC

If the extended communications search fails to locate the aircraft or if one hour has elapsed since ALNOT transmission, whichever occurs first, the destination station shall call the RCC and, if appropriate, the Cleveland FSS, which notifies the Cleveland RCC. Provide all pertinent available information about the overdue aircraft not already provided in the ALNOT. Include:

**a.** Agency and person calling.

**b.** Details of flight plan. If aircraft was not on a flight plan, include all facts about the source of the report.

**c.** Time the last radio transmission was received, by whom, and the frequency used.

**d.** Last position report.

**e.** Whether or not an ELT signal was heard or reported along the route of flight.

**f.** Action taken and proposed action by the reporting station.

**g.** Upon request, furnish positions of other aircraft known to be along or near the route of flight of the missing aircraft.

## 8-33. CANCELLATION OF ALNOT

The ALNOT remains current until the aircraft is located or the search is suspended by the RCC. The ALNOT originator shall then transmit a cancellation message addressed to all recipients of the ALNOT. Each facility shall notify all previously alerted facilities and agencies of the cancellation.

**Examples. —**

/B
SS (appropriate ARTCC circuit codes, other addresses as identified in paragraph 8-30a) INCLUDE KRCCYC
DTG KORLYF
ALNOT N1513B CNLD ACFT LCTD JAX
(Enter key)
/B
SS (appropriate ARTCC circuit codes, other addresses as identified in paragraph 8-30 a) INCLUDE KRCCYC
DTG KORLYF
ALNOT N1513B CNLD. SEARCH SUSPENDED
(Enter key)

## 8-34. thru 8-39. RESERVED

## Section 5. OTHER SAR ACTIONS

### 8-40. CONTACT WITH AIRCRAFT CROSSING HAZARDOUS AREA

When lake, island, mountain, or swamp reporting service programs have been established and a pilot requests the service, establish contact every 10 minutes (or at designated position check points) with the aircraft while it is crossing the hazardous area. If contact with the aircraft is lost for more than 15 minutes, alert Search and Rescue.

**Note.** —Hazardous Area Reporting Service and chart depictions are published in the AIM, Basic Flight Information and ATC Procedures.

### 8-41. CANADIAN TRANSBORDER

**a.** Assume responsibility for initiating SAR action on transborder aircraft upon acknowledgment for the inbound flight notification message.

**b.** When SAR action is initiated, the destination and departure facilities are responsible for all communications search actions within their respective countries and for alerting their respective RCC.

**c.** Canadian communications search procedures and action times are similar to U.S. procedures. They will address all SAR messages to the U.S. departure FSS who is then responsible for initiating SAR action for the U.S. portion of the route of flight.

**d.** For inbounds from Canada, apply standard U.S. SAR procedures contained in this section for the U.S. portion of the route. Include the Canadian departure facility as an addressee on all SAR messages since that facility is responsible for initiating SAR action for the Canadian portion of the route of flight.

**e.** Upon receipt of a Canadian QALQ, the departure FSS shall take the following actions:

(1) Check locally for any information about the aircraft.

(2) If unable to obtain additional information, or within 15 minutes after receipt of the QALQ, transmit a message to the destination facility containing all flight plan information not previously sent.

**f.** Upon receipt of a Canadian INREQ, the departure FSS shall transmit an INREQ for the U.S. portion of the route of flight and reply to Canada within 1 hour in accordance with standard INREQ procedures in this section.

**g.** Upon receipt of a Canadian ALNOT, the departure FSS shall transmit an ALNOT for the U.S. portion of the route and reply to Canada within 1 hour in accordance with standard ALNOT procedures in this section.

[illegible]

7 [illegible]

[illegible]

# Chapter 9. AVIATION WEATHER SERVICES

## Section 1. HOURLY SURFACE METEOROLOGICAL OBSERVATION

### 9-1. GENERAL

Surface meteorological observations are filed at scheduled and unscheduled intervals with stations having sending capability to WMSC for dissemination on the Service A domestic aviation weather system. These reports are: hourly airway surface observations (SA), hourly record special airway observations (RS), non-hourly special airway observations (SP), and supplemental surface observations (SW). All reports will include a report type followed by the four digit time of the observation.

### 9-2. PREPARATION FOR TRANSMISSION (SA/RS)

Prepare SA reports for transmission within the scheduled collection period (minute 55-00).

**a.** LABS entry—Utilize /T procedures

**b.** AWANS/MAPS/FSAS entry—In accordance with local procedures.

### 9-3. PREPARATION FOR TRANSMISSION (SP)

Prepare SP and delayed or corrected SA/RS reports as soon as possible after the scheduled collection period identified in paragraph 9-2.

**a.** LABS entry—Utilize /D procedures.

**b.** AWANS/MAPS/FSAS entry—In accordance with local procedures.

### 9-4. URGENT SPECIALS (USP)

An urgent special observation contains information of a tornado, funnel cloud or waterspout. These reports require special handling and shall be transmitted to WMSC immediately. The WMSC recognizes the report type designator "USP" as urgent, and will disseminate the report to all appropriate circuits immediately.

**a.** LABS entry—Utilize /T or /D, depending on the time of entry.

**b.** AWANS/MAPS/FSAS entry—In accordance with local procedures.

### 9-5. PREPARATION FOR TRANSMISSION (SW)

Prepare supplementary surface observations in accordance with procedures defined in paragraph 9-3.

### 9-6. DISTRIBUTION

Hourly surface observations (SA/RS/SP) and supplementary surface observations (SW) are disseminated by WMSC in accordance with predetermined lists for each circuit. All SA/RS/SP reports are stored in WMSC until H+55 of each hour. These reports are then released in anticipation of the new reports at H+00. All SW reports are stored in WMSC for three hours from time of receipt, unless replaced by an updated report from the same location. For this reason all users of SW reports should make careful note of the observation time.

### 9-7. thru 9-9. RESERVED

## Section 2. PILOT WEATHER REPORT (UA)

### 9-10. GENERAL

Pilot reports shall be entered into the system as individual reports, not appended to a surface observation. Entry shall only be between minute 00 and 55.

**a.** LABS entry—Utilize /D procedures.

**b.** AWANS/MAPS/FSAS entry-In accordance with local procedures.

### 9-11. RESPONSIBILITY

FSS specialists shall actively solicit PIREP's in conjunction with preflight and in-flight communications with pilots and assure timely dissemination of the PIREP information. Each facility should make special efforts to obtain PIREP's on climb-out and approach weather conditions at airports within their flight plan area.

### 9-12. PIREP DISPLAY

Maintain a PIREP display to conform with the particular requirements of your station. If it is posted for internal use only, symbology may be used at the facility's discretion. If it is to be displayed as a pilot self-briefing aid, the use of contractions; e.g., OVC, shall be applicable.

### 9-13. SOLICITING PIREP'S

**a.** Solicit PIREP's for the affected area/s when one or more of the following weather conditions exist, are reported, or forecast to occur:

(1) Ceilings at or below 5,000 feet.

(2) Visibility reported on the surface or aloft is 5 miles or less.

(3) Thunderstorms and related phenomenon.

(4) Turbulence of moderate degree or greater.

(5) Icing of light degree or greater.

(6) Wind shear.

**b.** Also solicit PIREP's regardless of weather conditions when:

(1) An NWS or an ATC facility indicates a need because of a specific weather or flight assistance situation.

(2) Necessary to determine flying conditions pertinent to natural hazards (mountain passes, ridges, peaks) between the weather reporting stations.

(3) The station is designated as responsible for PIREP's in an offshore coastal area.

**c.** Flight watch specialists shall solicit sufficient PIREP's, to remain aware of flight conditions.

**d.** To solicit PIREP's within a specific area, broadcast a request on NAVAIDs, transcribed broadcast facilities, or a selected communications frequency.

*Phraseology:*

PILOT WEATHER REPORTS REQUESTED (location/area) CONTACT (name) RADIO/FLIGHT WATCH ON (frequency) TO REPORT THESE CONDITIONS.

### 9-14. RECORDING PIREP DATA

Record PIREP data on FAA Form 7110-2, or material deemed appropriate.

### 9-15. DATA TO BE INCLUDED IN PIREP's

Include the following reports of flight conditions, as appropriate:

**a.** Height and coverage of cloud bases, tops, and layers.

**b.** Flight Visibility.

**c.** Restrictions to visibility and weather occurring at altitude.

**d.** Air temperature and changes to temperature with altitude or range.

**e.** Direction and speed of wind aloft.

**f.** Extent and intensity of turbulence. See paragraph **9-16.**

**g.** Extent, type and intensity of icing. See paragraph **9-17**

**h.** Weather conditions and cloud cover through mountain passes and over ridges and peaks.

**i.** Location, extent and movement of thunderstorms and/or tornadic activity.

**j.** Excessive wind aloft, LLWS and other phenomena bearing on safety and effeciency of flight.

### 9-16. REPORTING TURBULENCE IN PIREP's

**a.** Turbulence reports should include location, altitude or range of altitudes, whether in clouds or clear air, and aircraft type. The degree of turbulence intensity is determined by the pilot. It is essential that the report is obtained and disseminated when possible in conformance with the U.S. Standard Turbulence Criteria Table as follows:

"Light"—Loose objects in aircraft remain at rest.

"Moderate"—Unsecured objects are dislodged. Occupants feel definite strains against seat belts and shoulder straps.

"Severe"—Occupants thrown violently against seat belts. Momentary loss of aircraft control. Unsecured objects tossed about.

"Extreme"—Aircraft is tossed violently about, impossible to control. May cause structural damage.

**b.** Report CAT or CHOP if used by the pilot to describe the type of turbulence

## 9-17. REPORTING ICING CONDITIONS IN PIREP's

**a.** Icing reports should include location, altitude or range of altitudes, type aircraft, intensity and type of icing.

**b.** Icing type is described as follows:

"Rime"—Rough, milky, opaque ice is formed by the instantaneous freezing of small supercooled water droplets.

"Clear"—A glossy, clear or translucent ice formed by the relatively slow freezing of large supercooled water droplets.

"Mixed"—A combination of rime and clear.

**c.** Icing intensity is described as follows:

"Trace"—Ice becomes perceptible. Rate of accumulation slightly greater than sublimation. It is not hazardous even though de-icing/anti-icing equipment is not utilized unless encountered for an extended period of time—over one hour.

"Light"—The rate of accumulation may create a problem if flight is prolonged in this environment (over one hour). Occasional use of de-icing/anti-icing equipment removes/prevents accumulation. It does not present a problem if de-icing/anti-icing is used.

"Moderate"—The rate of accumulation is such that even short encounters become potentially hazardous and use of de-icing/anti-icing equipment or diversion is necessary.

"Severe"—The rate of accumulation is such that deicing/anti-icing equipment fails to reduce or control the hazard. Immediate diversion is necessary.

## 9-18. MEANS USED TO COLLECT PIREP's

Use the following methods, as appropriate, to collect PIREP's:

**a.** Inform pilots of a need for PIREP's during preflight weather briefings.

**b.** Request on postflight basis.

**c.** Request PIREP's during regular air-ground contacts.

**d.** Broadcast a request on NAVAID frequencies.

**e.** Append a request for PIREP's on TWEB/VOR TWEB and PATWAS broadcasts.

**f.** Coordinate with air carrier and military operations offices, military pilot-to-forecaster units and local aircraft operators.

**g.** Request PIREP solicitation from other air traffic facilities.

(1) Contact the supervisor in terminal facilities.

(2) Contact the CWSU or facility weather coordinator at an ARTCC.

**Reference.** FAAH 7210.3, paragraph 820.

## 9-19. PIREP CLASSIFICATION

Categorize PIREP's as follows:

**a.** URGENT—Weather phenomena reported by a pilot which represents a hazard, or potential hazard, to flight operations. Disseminate reports of the following conditions as URGENT PIREP's:

(1) Tornados, funnel clouds, or waterspouts.

(2) Severe or extreme turbulence (including clear air turbulence).

(3) Severe icing.

(4) Hail.

(5) Low level wind shear.

**Note. —** Defined as wind shear within 2,000 feet of the surface.

(6) Any other weather phenomena reported which are considered by the specialist as being hazardous, or potentially hazardous, to flight operations.

**b.** ROUTINE—Classify as ROUTINE all PIREP's received except those listed above.

## 9-20. PIREP HANDLING

Upon receipt of a PIREP, accomplish the following:

**a.** URGENT:

(1) Broadcast it immediately on voice channels of all navigation aids, except ILS. Apply special weather broadcast procedures, except identify the data as "pilot weather report."

(2) Deliver it to the ARTCC weather coordinator as soon as possible.

(3) Deliver it to the associated WSO as soon as possible.

(4) Enter on Service A at the first opportunity.

(5) Use, as appropriate, in weather briefings.

**b.** ROUTINE:

(1) Transmit on Service A as soon as practicable.

(2) Enter on PATWAS, TWEB, and VOR TWEB in routine broadcast updates.

(3) Use for preflight and in-flight services as appropriate.

## 9-21. OFFSHORE COASTAL ROUTES

When your station has been given responsibility for collecting offshore coastal route PIREP's:

**a.** Include the coastal water area when soliciting PIREP's. At least one PIREP is required hourly regardless of weather conditions.

**b.** *Pacific*—Hawaiian Island station areas coincide with the Honolulu ARTCC sectors and the entire Hawaiian area is designated as offshore areas for PIREP purposes.

**Note.** — The AT Division assigns PIREP responsibility for an offshore coastal area, route, or route segment to a specific station. The area assigned will be within the same ARTCC area as the station, and the station shall have adequate air-ground communications coverage over its assigned offshore area.

## 9-22. PIREP PREPARATION

To assure proper dissemination of PIREP's to all system users, the following encoding procedures shall be followed:

**a.** Identify each element by a text element indicator (TEI).

**b.** Ensure each report includes TEIs for message type, location, time, altitude/flight level, type aircraft, and at least one other to describe the reported phenomena.

**c.** Precede each TEI, except message type, with a solidus (/).

**d.** Follow each TEI, except altitude/flight level, with a space.

**e.** Insert zeroes in reported values when the number of digits in the report is less than the number required by the format.

**f.** Use only authorized aircraft designators and contractions.

**g.** In the location TEI use only VHF NAVAID identifiers to describe a fix or route segment (except in Alaska).

**h.** Omit entries of TEIs, except as listed in item b. above, for which no data was reported.

## 9-23. PIREP FORMAT

Using TEI's, as described below, prepare PIREP's for system entry in the following format:

**a.** UUA or UA — Message Type. Urgent or routine PIREP.

**b.** /OV — Location of the reported phenomenon(a).

(1) Fix — Location over a NAVAID: (/OV PHX)

(2) Fix — Location in reference to a NAVAID, encoded as a three letter NAVAID identifier, followed by a space, followed by three digits to define the radial and three digits to define the distance in nautical miles: (/OV PHX 095020)

(3) Route segment—Two or more fixes, as in (1) and (2) above, to describe a route:

(/OV AOO-LRP-MIV 280015)

(/OV SAV-ABY)

(/OV TUS 360012-PHX 180040)

**c.** /TM — Time that the reported phenomenon(a) occurred or was encountered. Report time in four digits UTC: (/TM 1315).

**d.** /FL — Altitude/flight level. Enter the altitude in hundreds of feet where the phenomenon(a) was first encountered. If not known, enter UNKN. If the aircraft was climbing or descending, enter the appropriate contraction (DURGC or DURGD) in the remarks section (/RM). If the condition was encountered within a layer, enter the altitude range within the appropriate TEI describing the condition. (/FL093), (/FL310), (/FLUNKN).

**e.** /TP — Type aircraft. Enter aircraft type. If not known, enter UNKN: (/TP PA60), (/TP B707), (/TP P3), (/TP UNKN).

**f.** /SK — Sky cover. Report height of cloud bases, tops, and cloud coverage as follows:

(1) Enter height of cloud bases and tops separated by the sky condition (cloud cover) as reported by the pilot. Heights are reported in hundreds of feet MSL using three digits.

(2) Use authorized contractions for sky cover (CLR, SCT, BKN, OVC).

(3) Cloud cover amount ranges will be entered with a hyphen and with no spaces separating the amounts (BKN-OVC).

(4) Thin layer amounts are preceded by a hyphen (-OVC).

(5) Unknown heights are indicated by UNKN.

(6) If the pilot reports he is in the clouds, enter OVC.

(7) Use spaces between heights and cloud cover contractions.

(8) When more than one layer is reported, separate layers by a solidus (/).

**Examples.—**

/SK 045 SCT 058

/SK BKN 045/065 OVC 093

/SK OVC

/SK UNKN OVC

/SK 025-BKN

**g.** /WX — Flight visibility and flight weather. Report weather conditions encountered by the pilot as follows:

(1) Flight visibility, if reported, will be the first entry in the /WX field. Enter as FV followed by a two digit visibility value rounded down, if

necessary, to the nearest whole statute mile (FV03). If visibility is reported as unrestricted, enter FV99.

(2) Enter flight weather types using one or more of the following standard surface weather reporting symbols:

| | |
|---|---|
| Fog | F |
| Haze | H |
| Smoke | K |
| Dust | D |
| Drizzle | L |
| Rain | R |
| Snow | S |
| Freezing Rain/Drizzle | ZR/ZL |
| Thunderstorms | T, TRW |
| Hail | A |
| Funnel Cloud | FUNNEL CLOUD |
| Waterspout | WATERSPOUT |
| Tornado | TORNADO |

(3) Shower activity, not associated with thunderstorms, is encoded as R or S with SHWRS included in remarks if necessary.

(4) Intensity of precipitation is not reported in the /WX field. If necessary, heavy precipitation can be included in the remarks section of the PIREP.

(5) Weather layers are reported in the same format as cloud layers (002 K 006).

(6) When more than one type of weather is reported, report precipitation first, then the visibility restriction. Separate reported elements with a space.

**Example.—**

/WX FV02 R

/WX FV03 R F

/WX T

**h.** /TA — Air Temperature. Report outside air temperature using two digits in degrees Celsius. Prefix negative temperatures with a minus sign (-). (/TA 08), (/TA -32).

**i.** /WV — Wind direction and speed. Encode using three digits to indicate wind direction (magnetic) and three digits to indicate reported wind speed. (/WV 265080).

**j.** /TB — Turbulence. Report intensity, type and altitude of turbulence as follows:

(1) Intensity — Enter intensity first using contractions LGT, MDT, SVR, and EXTRM. Separate a range or variation of intensity with a hyphen, (e.g., MDT-SVR). If turbulence has been forecast, enter reports of no turbulence as NEG.

(2) Type — Enter CAT or CHOP if reported by the pilot.

(3) Altitude — Report altitude only if it differs from value reported in /FL. When a layer of turbulence is reported, separate height values with a hyphen. If lower or upper limits are not defined, use BLO or ABV.

**Example. —**

/TB LGT

/TB MDT-SVR

/TB LGT-MDT 040-085

/TB MDT CHOP

/TB NEG

**k.**/IC — Icing. Report intensity, type, and altitude of icing as follows:

(1) Intensity — Enter intensity first using contractions TRACE, LGT, MDT, and SVR. Separate reports of a range or variation of intensity with a hyphen. If icing was forecast, but not encountered, enter NEG.

(2) Type — Enter the reported icing type. (RIME, CLR, or MXD).

(3) Altitude — Enter the reported icing altitude only if different from the value reported in the /FL TEI. Use a hyphen to separate reported layers of icing. Use ABV or BLO when layer is not defined.

**Example.—**

/IC LGT RIME

/IC LGT-MDT MXD

/IC SVR CLR 035-062

/IC MDT RIME BLO-095

**l.**/RM — Remarks. Use this TEI to report phenomenon(a) which is considered important but does not fit in any of the other TEIs.

(1) This includes, but is not limited to: Low level wind shear (LLWS) reports; thunderstorm lines, coverage and movement; hail; lightning; electrical discharge; duststorms; sandstorms; CONTRAILS; and clouds observed but not encountered. Report hazardous weather first in the /RM TEI.

(2) If the /OV TEI does not adequately describe the location, enter this information in remarks, e.g. /OV DPK 100010 /RM OVR ISP

(3) Describe LLWS to the extent possible.

**Examples.—**

/RM LLWS 090030-040035 DURGC RY 33L 002-005.

/RM LLWS-15KT 003-SFC DURGD RY 28L PIT.

## 9-24. PIREP ENCODING

PIREP's shall be coded to ensure the PIREP is stored and subsequently distributed with the surface observation location nearest the condition being reported. If more that one SA location is appropriate, select the location that provides the greatest distribution and/or prominency (e.g. major hub airport).

## 9-25. PIREP ORDER

**a.** Prepare PIREP's by routes if possible, from the reported location to an adjacent location. Start a multiple PIREP transmission with the most northerly route and progress clockwise. Place each PIREP on a separate line.

**Examples.—**

UA /OV MRB 045030 /TM 16645 /FL060
/TP MO21 /SK OVC 055
UA /OV MRB-DCA /TM 1630 /FL090
/TP PA24 /RM BTWN LYRS 090
UA /OV MRB-EKN /TM 1640 /FL060
/TP BE50 /SK BKN 040 /RM
RDGS OBSCD.

**b.** Whenever possible include base, tops, and amounts of each sky cover.

## 9-26. PIREP SUMMARY (UB)

**a.** PIREP's collected from Service A are forwarded by the WMSC to Suitland where they are compiled by computer into summaries by States. The summaries are transmitted back to the WMSC as collectives between H+25 and H+31 and also between H+46 and H+52 where they are available for Request/Reply retrieval using the RQ format.

**b.** PIREP summaries are not recommended for briefing pilots. These reports contain data already disseminated to Service A area circuits as individual PIREP's. Summaries are prepared by the NWS for forecasters and are held in WMSC storage for 3 hours.

## 9-27. thru 9-29. RESERVED

## Section 3. RADAR WEATHER REPORT (SD)

### 9-30. GENERAL

**a.** Individual radar weather reports, identified as SD, are collected by the National Meteorological Center (NMC) Suitland, Maryland. These reports are entered by Weather Service Offices on the Radar Report and Warning Coordination (RAWARC) circuits. NMC also collects radar report bulletins from military reporting locations and Canada.

**b.** When normal entry is not possible, SD reports can be entered on Service A circuits upon request by National Weather Service RAWARC entry stations.

### 9-31. SCHEDULE

Radar weather reports are transmitted on Service A by WMSC at H+56 to H+00 each hour. These reports are not scheduled transmissions but are given priority handling during this four minute time frame.

### 9-32. DISTRIBUTION

**a.** Radar weather reports are sent to WMSC by NMC each hour for distribution. These reports are received on an unscheduled basis and can be expected to appear during any unscheduled distribution period.

**b.** Each individual WMSC circuit receives a unique collection based upon their requirements. Circuit distribution lists are filed at circuit control facilities. FAAH 7110.80, chapter 6 outlines all reports available in the WMSC data base.

### 9-33. thru 9-39. RESERVED

# Section 4. WINDS AND TEMPERATURE ALOFT FORECAST (FD)

## 9-40. GENERAL

Winds and Temperature Aloft Forecasts (FD) are computer-prepared and issued by the National Meteorological Center (NMC) at Suitland, Maryland. The forecasts are valid 6 (FD1/8), 12(FD2/9) and 24 (FD3/10) hours after the observation date times of 0000Z and 1200Z upon which they are based. An unscheduled amendment to an FD may be prepared and issued by a WSFO.

## 9-41. LEVELS FORECAST

Dependent upon station elevation, FD1/2/3 wind forecasts are issued for the following levels: 3, 6, 9, 12, 18, 24, 30, 34, and 39 thousand foot levels. The first level for which a wind forecast is issued is 1500 feet or more above the station elevation. Temperature is forecast for all wind levels, except the 3,000 foot level, that are 2,500 feet or more above the station. The minus signs are deleted preceding the temperatures at the 30, 34, and 39 thousand foot levels. FD 8/9/10 are for the 45,000 and 53,000 foot levels They are not normally disseminated on Service A, but are available on request reply.

## 9-42. SCHEDULES

| *Type* | *Base Data Time* | *Valid for* | *For use (period)* |
|---|---|---|---|
| FD1/8 | 0000Z | 0600Z | 0500-0900Z |
| FD2/9 | 0000Z | 1200Z | 0900-1800Z |
| FD3/10 | 0000Z | 0000Z | 1800-0500Z |
| FD1/8 | 1200Z | 1800Z | 1700-2100Z |
| FD2/9 | 1200Z | 0000Z | 2100-0600Z |
| FD3/10 | 1200Z | 1200Z | 0600-1700Z |

## 9-43. DISTRIBUTION

All FDs are transmitted to the WMSC by NMC. Distribution by the WMSC is accomplished in accordance with established program requirements. Amended FD data prepared and entered by a WSFO is distributed to the same users as the original product prepared by NMC.

## 9-44. thru 9-49. RESERVED

## Section 5. AVIATION TERMINAL FORECAST (FT)

### 9-50. GENERAL

24 hour Terminal Forecasts (FT) for selected U.S. terminals are prepared by National Weather Service Forecast offices and forwarded to the WMSC for distribution. Similar forecasts for the U.S. Military, Canada and Mexico are sent to WMSC from the National Meteorological Center (NMC) and Air Weather Service (AWS) for distribution.

### 9-51. TERMINAL FORECAST SCHEDULES

**a.** 48 contiguous states:

| Time Zone | UTC | Validity | Outlook |
|---|---|---|---|
| Eastern | 0940 | 10Z-04Z | 04Z-10Z |
| Central | 0940 | 10Z-04Z | 04Z-10Z |
| Mountain | 0940 | 10Z-04Z | 04Z-10Z |
| Pacific | 0940 | 10Z-04Z | 04Z-10Z |
| Eastern | 1440 | 15Z-09Z | 09Z-15Z |
| Central | 1440 | 15Z-09Z | 09Z-15Z |
| Mountain | 1540 | 16Z-10Z | 10Z-16Z |
| Pacific | 1540 | 16Z-10Z | 10Z-16Z |
| Eastern | 2140 | 22Z-16Z | 16Z-22Z |
| Central | 2140 | 22Z-16Z | 16Z-22Z |
| Mountain | 2240 | 23Z-17Z | 17Z-23Z |
| Pacific | 2240 | 23Z-17Z | 17Z-23Z |

**b.** Alaska:

| Area | UTC | Validity |
|---|---|---|
| Southeastern | 0340 | 04Z-04Z |
| | 1040 | 11Z-11Z |
| | 1440 | 15Z-15Z |
| | 2040 | 21Z-21Z |
| Remainder | 0340 | 04Z-04Z |
| | 1040 | 11Z-11Z |
| | 1540 | 16Z-16Z |
| | 2040 | 21Z-21Z |

### 9-52. DISTRIBUTION

Distribution of Aviation Terminal Forecasts (FT) are made by WMSC in accordance with a predetermined list for each circuit based upon intracircuit coordinated requirements. A detailed listing of all FT reporting locations are outlined in 7110.80, Chapter 6. WSFO's and the terminals for which they forecast are listed in the National Weather Service Operations Manual (WSOM) Chapter D-21.

### 9-53. thru 9-59. RESERVED

# Section 6. AVIATION AREA FORECAST (FA)

## 9-60. GENERAL

**a.** Aviation Area Forecasts (FA) are available through the WMSC and provide an overview of weather conditions which could impact aviation operations. FA's are issued by the National Aviation Weather Advisory Unit in Kansas City, MO., for the conterminous U.S. land and coastal waters by areas (Pacific Coast, Rocky Mountain, North-Central U.S., South-Central U.S., Northeast U.S., Southeast U.S.). The areas are delineated along state boundaries and are specified in the National Weather Service (NWS) Operations Manual, Chapter D-20. The FA's for Alaska and Hawaii are issued by the Weather Service Forecast Offices (WSFO) located in Anchorage, Fairbanks and Juneau in Alaska and Honolulu, Hawaii. The geographical areas of coverage for the appropriate WSFO's are specified in Chapter D-20 of the NWS Operations Manual. (Canadian and Mexican FA's are also available through the WMSC as outlined in 7110.80 Chapter 6.)

**b.** FA's consist of five sections with each section being transmitted with a unique communications header. This allows each section to be replaced, when needed, instead of amending or correcting the affected FA, to provide a current and complete area forecast. In-flight advisories (including Convective SIGMETs) amend the FA, however, when necessary, the appropriate section of the FA will be replaced by the issuing NWS office. The five FA sections and their communications headers are as follows (iii denotes the FA location identifier, e.g., ANC, CHI, etc.):

(1) *iii*H — Hazards/Flight Precautions

(2) *iii*S — Synopsis

(3) *iii*I — Icing and Freezing Level

(4) *iii*T — Turbulence

(5) *iii*C — Significant Clouds and Weather

**c.** The Significant Clouds and Weather portion, Section 5, contains an FA outlook pertaining to conditions expected for an additional 6 hour period. The outlook is categorical, as indicated in the following table:

| Ceiling | Visibility |
|---|---|
| LIFR<500 | and/or>1 |
| IFR≥500— <1000 | and/or≥1— <3 |
| MVFR≥1000— ≤3000 | and/or≥3— ≤5 |
| VFR>3000 | and >5 |

< — less than
> — greater than
≤ — equal to or less than
≥ — equal to or greater than

## 9-61. AVIATION AREA FORECAST (FA) SCHEDULE

**a.** FA's are prepared 3 times a day in the contiguous 48 states and Alaska, and 4 times a day in Hawaii. The scheduled transmission times in the contiguous U.S. are as follows:

| | *BOS and MIA Areas* | *CHI and DFW Areas* | *SFO and SLC Areas* |
|---|---|---|---|
| 1st issuance | 0840Z | 1040Z | 1140Z |
| 2nd issuance | 1740Z | 1840Z | 1940Z |
| 3rd issuance | 0040Z | 0140Z | 0240Z |

**b.** The Alaska and Pacific NWS Regional Headquarters have authority to schedule FA's to meet user requirements and are issued at the following times:

| | *ANC and FAI* | *JNU* | *HNL* |
|---|---|---|---|
| 1st issuance | 0640Z | 0640Z | 0340Z |
| 2nd issuance | 1440Z | 1340Z | 0940Z |
| 3rd issuance | 2240Z | 2240Z | 1540Z |
| 4th issuance | | | 2140Z |

## 9-62. DISTRIBUTION

Distribution of Aviation Area Forecasts (FA) is made by WMSC in accordance with a predetermined list for each circuit based upon intracircuit coordinated requirements.

## 9-63. thru 9-69. RESERVED

## Section 7. SEVERE WEATHER FORECASTS

### 9-70. GENERAL

Severe Weather Forecasts, Bulletins, Status Reports and Alerts are filed at irregular intervals by the NWS National Severe Storm Forecast Center (NSSFC) at Kansas City, MO and transmitted to WMSC for distribution. The alert (MKC AWW) is a preliminary announcement of a forthcoming severe weather watch and includes all information required for aviation purposes. Stations may obtain the Severe Weather Watch (MKC WW) from WMSC if desired. The WW number is included in the text of the AWW.

### 9-71. DISTRIBUTION

Upon receipt of MKC AWW alert, the WMSC will immediately interrupt the active task on selected Service A circuits and transmit the report. Severe weather status reports are never urgent. They are relayed unscheduled.

### 9-72. SEVERE WEATHER OUTLOOK NARRATIVE (AC)

In addition to Severe Weather Forecast, the Kansas City NSSFC will frequently file for transmission a "Severe Weather Outlook Narrative" which will contain a brief evaluation of present and expected surface and upper air criteria conducive to severe local storms. These are assigned report type "AC"

### 9-73. thru 9-89. RESERVED

## Section 8. FLIGHT ADVISORIES (SIGMET WS — AIRMET WA — CONVECTIVE SIGMET WST)

### 9-90. GENERAL

Flight Advisories are issued by the National Aviation Weather Advisory Unit in Kansas City for the conterminous U.S. and the appropriate WSFO in Alaska and Hawaii to provide notice of potentially hazardous weather conditions by amending or supplementing portions of the valid area forecast (FA). The report type designator WS for SIGMETs, WST for convective SIGMETs, and WA for AIRMETs is used to effect selective distribution. The text of the message identifies which advisory is being transmitted. SIGMETs are identified with letters "A" (Alpha) through "N" (November) and AIRMETs with letter "O" (Oscar) through "Z" (Zulu). The latest message for each system is kept in the computer's active storage file by the WMSC: WA for 360 minutes; WS for 360 minutes; WST for 45 minutes.

**Note.** — Honolulu WS data is available in Weather Collective format, see **Handbook 7110.80—Appendix F**, WSPA1/2 PHNL.

### 9-91. DISTRIBUTION

SIGMET (WS) and AIRMET (WA) messages are distributed unscheduled to all Service A circuits. Convective SIGMET (WST) is distributed priority scheduled at H+55 each hour by WMSC to all circuits.

### 9-92. thru 9-99. RESERVED

# Section 9. TRANSCRIBED WEATHER BROADCAST (TWEB)

## 9-100. GENERAL

The Transcribed Weather Broadcast (TWEB) and synopsis for selected routes are prepared by National Weather Service Forecast Offices and forwarded to the WMSC for distribution.

TWEB *Schedule*

| Time Zone | UTC | Validity |
|---|---|---|
| Eastern | 1115 | 11Z-23Z |
| Central | 1115 | 11Z-23Z |
| Mountain | 1140 | 12Z-00Z |
| Pacific | 1140 | 12Z-00Z |
| Eastern | 1740 | 18Z-06Z |
| Central | 1740 | 18Z-06Z |
| Mountain | 1840 | 19Z-07Z |
| Pacific | 1840 | 19Z-07Z |
| Eastern | 2315 | 23Z-17Z |
| Central | 2315 | 23Z-17Z |
| Mountain | 0015 | 00Z-18Z |
| Pacific | 0015 | 00Z-18Z |

**a.** The morning and mid-day TWEB and synopsis will be valid for 12 hours. The evening TWEB and synopsis will be valid 18 hours with no outlook.

**b.** Eastern and Central TWEBs shall not be entered prior to H+20 for hours 10, 17 and 22 UTC. Mountain and Pacific TWEBs shall not be entered prior to H+20 for hours 11, 18, and 23 UTC.

## 9-101. CROSS COUNTRY ROUTES

WMSCs storage contains a selection of combined individual route segments that defines cross country routes. These are accessed by using the request list format defined in 7110.80, Chapter 6, Section 2. Section 4 defines the route segment and list number for each cross country route.

## 9-102. COMBINED TWEB ROUTES AND SYNOPSIS

WMSC stores each WSFO's TWEB routes and synopsis combined in one list. These lists and their list numbers are defined in 7110.80, Chapter 6, Section 4.

## 9-103. thru 9-109. RESERVED

## Section 10. METEOROLOGICAL IMPACT STATEMENT (MIS)

### 9-110. GENERAL

A Meteorological Impact Statement (MIS) is an unscheduled planning forecast. It is an air traffic oriented forecast intended for ARTCC, Central Flow Weather Service Unit (CFWSU), Center Flow Control Function (CFCF), and hub terminal air traffic facility specialists responsible for making flow control and flow control related decisions. It enables these specialists to include the impact of expected, specified local and/or national weather conditions in making these decisions.

### 9-111. CRITERIA

**a.** The MIS describes adverse weather conditions which are expected to begin within, generally, 4 to 12 hours after the statements issuance. It can also describe conditions existing when the Central Weather Service Unit (CWSU) begins daily operations, if the existing conditions will continue for at least 3 hours, or it can describe conditions existing at the time a briefing is issued. As a minimum, a MIS will be issued when:

(1) Any of the following conditions occur, or are forecast to occur;

(a) conditions meeting convective SIGMET criteria (see the Weather Service Operations Manual (WSOM), Chapter D-22);

(b) moderate or greater icing;

(c) moderate or greater turbulence;

(d) heavy precipitation;

(e) freezing precipitation;

(f) conditions at, or approaching, low IFR (see WSOM, Chapter D-21);

(g) surface winds, including gusts of 30 knots or greater;

(h) low level wind shear (within 2,000 feet of the surface);

(i) volcanic ash, dust storms, or sandstorms; and,

(2) The above conditions will, in the forecasters judgment, impact the flow of air traffic within the ARTCC area of responsibility; and,

(3) The forecast lead time (the time between the issuance of a MIS and the onset of the phenomenon), in the forecasters judgment, is sufficient to make the issuance of a Center Weather Advisory (CWA) premature, or unnecessary.

**b.** The MIS will describe the location of the phenomenon using ARTCC relevant points of reference, such as VORs, and will include the height, extent, intensity, and movement of the phenomenon. MISs will be numbered sequentially, beginning at midnight local time each day. Forecasters should be aware that the MIS is disseminated and stored as a replaceable product. This means that each MIS issuance must contain all of the pertinent and known details of the conditions meeting MIS issuance criteria, including the continuing conditions described in previously issued MISs.

**c.** The format of the MIS communications header is: (ARTCC designator) MIS (issuance number)(date/time issued in UTC)/(valid until date/time in UTC) (text)

**Example. —**

ZJX MIS 02 111345/120100
SCT LVL 3 AND 4 TSTMS ALG N/S RTES S OF ILM AND E OF SAV/OMN LN DVLPG BY 16Z. MAX TOPS 350/400 ELSW ZJX AREA LVL 3 AND 4 TSTMS FRMG IN SHRT LNS OR CLUSTERS AFT 17Z WITH FEW RCHG LVL 5 AND 6 CELLS MOVG GENLY SEWD 10 KTS CONT THRU 00Z. CONDS LWRG OCNLY TO LIFR IN HVY PCPN AFT 17Z.

**Note. —** The format of the MIS communications header must be followed exactly if the product is to be distributed through LSAS.

### 9-112. DISTRIBUTION

**a.** The MIS will be distributed to ARTCC area supervisors and traffic management coordinators, and will be entered through FAA LABS and other communications media to make it available for dissemination to other FAA and National Weather Service (NWS) facilities, including adjacent CWSUs and locally designated hub terminal facilities. Distribution may be made directly by the CWSU meteorologist or through the weather coordinator position. When a MIS is issued concurrently with a briefing, the MIS will be distributed through those media to facilities, mentioned above, which do not receive a alphanumeric version of the briefings contents.

### 9-113. thru 9-119. RESERVED

## Section 11. CENTER WEATHER ADVISORY (CWA)

### 9-120. GENERAL

A Center Weather Asvisory (CWA) is an unscheduled weather advisory. It is issued for the guidance of ARTCC personnel, designated FAA facilities, Central Flow Weather Service Unit (CFWSU) meteorologists, and air crews in flight to anticipate, or avoid, adverse weather conditions in terminal and enroute environments.

### 9-121. CRITERIA

**a.** The CWA is not a flight planning document. By nature of its short lead time, it reflects weather conditions in existence at the time of issuance or conditions beginning within the next 2 hours. If conditions are expected to persist beyond the time of the valid period and/or if conditions extend beyond the ARTCC area, statements to this effect should be included in the text. The Central Weather Service Unit (CWSU) will issue a CWA:

(1) When necessary as a supplement to an existing SIGMET (including convective SIGMETs), to an existing AIRMET, or to an existing area forecast (FA) section. The issuance of a CWA under these circumstances should be limited to occasions when, in the judgment of the CWSU meteorologist, real time information adequately supports the issuance of a redefining statement update or advanced amendment. Such real time information regarding the phenomenon covered by a National Aviation Weather Advisory Unit (NAWAU) product may be pilot reports, radar satellite, or information from other sources. The purpose of the CWA, under these circumstances, is to improve or to update the definition of the phenomenon in terms of relevance to users in the ARTCC area regarding the phenomenons location, movement, extent and intensity. A CWA, for example, describing an IFR AIRMETs area of low IFR (LIFR) conditions in terms of ARTCC reference points would be a valid redefinition of the location and intensity relevant to the ARTCCs area and would meet documented requirements.

(2) When an inflight advisory has not yet been issued but the observed, or expected, weather conditions meet SIGMET or AIRMET criteria, based on current pilot reports and reinforced by other sources of information concerning existing meteorological conditions. In this situation, the CWSU meteorologist should call the appropriate forecaster at the NAWAU or appropriate Alaska Weather Service Forecast Office (WSFO). If the CWSU forecaster determines that it is necessary to issue a CWA to allow lead time while the SIGMET/AIRMET is being prepared, the CWA will be issued and the CWA should indicate that a SIGMET/AIRMET will be issued shortly.

(3) The CWSU meteorologist may issue a CWA when observed, or developing weather conditions do not meet SIGMET (including convective SIGMET) or AIRMET criteria but current pilot reports or other weather information sources indicate that an existing, or anticipated, meteorological phenomena will adversely affect the safe flow of air traffic within the ARTCC area of responsibility. In this situation, the data available must be sufficient, in the judgment of the CWSU meteorologist, to support both the issuance of such an advisory and, if necessary, its continuation.

**b.** The CWA will describe the location of the phenomenon using ARTCC relevant points of reference, such as VORs, and will include the height, extent, intensity, and movement of the phenomenon. Each CWA will have a phenomenon number (1 through 6) immediately following the ARTCC identifier in the CWA message heading. A separate phenomenon number will be assigned to each meteorologically distinct condition or group of conditions, such as, jetstream clear air turbulence, or, low IFR/icing conditions northwest of a low pressure center. The use of phenomenon numbers make it possible to store and disseminate up to 6 unrelated CWA conditions with each condition capable of being updated. Forecasters should be aware that the CWA is stored and disseminated as a replaceable product. This means that each subsequent CWA issuance must contain all of the pertinent and known details of the conditions meeting CWA issuance criteria, including the continuing conditions described in the previously issued CWAs. CWAs will also be numbered sequentially, beginning at midnight local time each day. The sequential CWA issuance number will be followed by the related 2 digit, alpha-numeric designator for inflight advisories in effect, if applicable. The CWA communications heading will also contain the CWA date/time of issuance in UTC and the "valid until" date/time in UTC. The difference between these two times will not exceed 2 hours.

**c.** The format of the CWA communications header is: (ARTCC) designator) (phenomenon number) CWA (issuance number)/(if applicable, 2 digit inflight advisory alphanumeric designator) (date/time issued in UTC)/(valid until date/time in UTC)(text).

**Examples. —**

ZOB3 CWA 01 032141/032300
LN LVL 5 AND 6 TSTMS 10S DET TO 40N DJB TO 40E SBN TO 80SE MKG MOVG FROM 2525 3/4 INCH HAIL RPRTD LAST 5 MINS 20 SW YIP. LVL 4 TO 6 TSTMS CONTG DTW AREA BYD 2300.
ZKC1 CWA 01/ALFA 4 121528/121728
NMRS RPTS OF MDT TO SVR ICG 080/090 30 MILE RADIUS OF STL. LGT OR NEG ICG RPTD 040/120 RMNDR OF ZKC AREA AND NE OF AREA.

**Note. —** The format of the CWA communications header must be followed exactly if the product is to be distributed through the LABS.

### 9-122. DISTRIBUTION

The CWA will be distributed to ARTCC area supervisors and traffic management coordinators, and will be entered through FAA LABS and other communications media to make it available for dissemination to other FAA and National Weather Service (NWS) facilities. Distribution may be made directly by the CWSU meteorologist or through the weather coordinator position.

# APPENDIX A

# PILOT/CONTROLLER GLOSSARY

# DECEMBER 18, 1986

This Glossary was compiled to promote a common understanding of the terms used in the Air Traffic Control system. It includes those terms which are intended for pilot/controller communications. Those terms most frequently used in pilot/controller communications are printed in ***bold italics***. The definitions are primarily defined in an operational sense applicable to both users and operators of the National Airspace System. Use of the Glossary will preclude any misunderstandings concerning the system's design, function, and purpose.

Because of the international nature of flying, terms used in the "Lexicon," published by the International Civil Aviation Organization (ICAO), are included when they differ from FAA definitions. These terms are *italicized*. For the reader's convenience, there are also cross references to related terms in other parts of the Glossary and to other documents, such as the Federal Aviation Regulations (FAR's) and the Airman's Information Manual (AIM).

This Glossary will be revised as necessary to maintain a common understanding of the system.

**ABBREVIATED IFR FLIGHT PLANS—** An authorization by ATC requiring pilots to submit only that information needed for the purpose of ATC. It includes only a small portion of the usual IFR flight plan information. In certain instances, this may be only aircraft identification, location, and pilot request. Other information may be requested if needed by ATC for separation/control purposes. It is frequently used by aircraft which are airborne and desire an instrument approach or by aircraft which are on the ground and desire a climb to VFR-on-top. (See VFR-ON-TOP) (Refer to AIM)

***ABEAM—*** An aircraft is "abeam" a fix, point, or object when that fix, point, or object is approximately 90 degrees to the right or left of the aircraft track. Abeam indicates a general position rather than a precise point.

***ABORT—*** To terminate a preplanned aircraft maneuver; e.g., an aborted takeoff.

***ACKNOWLEDGE—*** Let me know that you have received my message.

*ICAO—ACKNOWLEDGE—* Let me know that you have received and understood this message.

**ACROBATIC FLIGHT—** An intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration not necessary for normal flight. (Refer to FAR Part 91)

*ICAO—ACROBATIC FLIGHT—*Maneuvers intentionally performed by an aircraft involving an abrupt change in its attitude, an abnormal attitude, or an abnormal variation in speed.

**ADDITIONAL SERVICES—** Advisory information provided by ATC which includes but is not limited to the following:

1. Traffic advisories.
2. Vectors, when requested by the pilot, to assist aircraft receiving traffic advisories to avoid observed traffic.
3. Altitude deviation information of 300 feet or more from an assigned altitude as observed on a verified (reading correctly) automatic altitude readout (Mode C).
4. Advisories that traffic is no longer a factor.
5. Weather and chaff information.
6. Weather assistance.
7. Bird activity information.
8. Holding pattern surveillance.

Additional services are provided to the extent possible contingent only upon the controller's capability to fit them into the performance of higher priority duties and on the basis of limitations of the radar, volume of traffic, frequency congestion, and controller workload. The controller has complete discretion for determining if he is able to provide or continue to provide a service in a particular case. The controller's reason not to provide or continue to provide a service in a particular case is not subject to question by the pilot and need not be made known to him. (See Traffic Advisories) (Refer to AIM)

**ADMINISTRATOR—** The Federal Aviation Administrator or any person to whom he has delegated his authority in the matter concerned.

***ADVISE INTENTIONS—*** Tell me what you plan to do.

**ADVISORY—** Advice and information provided to assist pilots in the safe conduct of flight and aircraft movement. (See Advisory Service)

**ADVISORY FREQUENCY—** The appropriate frequency to be used for Airport Advisory Service. (See Airport Advisory Service and UNICOM) (Refer to Advisory Circular No. 90-42 and AIM)

**ADVISORY SERVICE—** Advice and information provided by a facility to assist pilots in the safe conduct of flight and aircraft movement. (See Airport Advisory Service, Traffic Advisories, Safety Alerts, Additional Services, Radar Advisory, En Route Flight Advisory Service) (Refer to AIM)

**AERIAL REFUELING/IN-FLIGHT REFUELING—** A procedure used by the military to transfer fuel from one aircraft to another during flight. (Refer to VFR/IFR Wall Planning Charts).

**AERODROME—** A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure, and movement of aircraft.

**AERONAUTICAL BEACON—** A visual NAVAID displaying flashes of white and/or colored light to indicate the location of an airport, a heliport, a landmark, a certain point of a Federal airway in mountainous terrain, or an obstruction. (See Airport Rotating Beacon) (Refer to AIM)

**AERONAUTICAL CHART—** A map used in air navigation containing all or part of the following: Topographic features, hazards and obstructions, navigation aids, navigation routes, designated airspace, and airports. Commonly used aeronautical charts are:

1. Sectional Charts—1:500,000—Designed for visual navigation of slow or medium speed aircraft. Topographic information on these charts features the portrayal of relief and a judicious selection of visual check points for VFR flight. Aeronautical information includes visual and radio aids to navigation, airports, controlled airspace, restricted areas, obstructions, and related data.
2. VFR Terminal Area Charts—1:250,000—Depict Terminal Control Area (TCA) airspace which provides for the control or segregation of all the aircraft within the TCA. The chart depicts topographic information and aeronautical information which includes visual and radio aids to navigation, airports, controlled airspace, restricted areas, obstructions, and related data.
3. World Aeronautical Charts (WAC)—1:1,000,000—Provide a standard series of aeronautical charts covering land areas of the world at a size and scale convenient for navigation by moderate speed aircraft. Topographic information includes cities and towns, principal roads, railroads, distinctive landmarks, drainage, and relief. Aeronautical information includes visual and radio aids to navigation, airports, airways, restricted areas, obstructions, and other pertinent data.
4. En Route Low Altitude Charts—Provide aeronautical information for en route instrument navigation (IFR) in the low altitude stratum. Information includes the portrayal of airways, limits of controlled airspace, position identification and frequencies of radio aids, selected airports, minimum en route and minimum obstruction clearance altitudes, airway distances, reporting points, restricted areas, and related data. Area charts, which are a part of this series, furnish terminal data at a larger scale in congested areas.
5. En Route High Altitude Charts—Provide aeronautical information for en route instrument navigation (IFR) in the high altitude stratum. Information includes the portrayal of jet routes, identification and frequencies of radio aids, selected airports, distances, time zones, special use airspace, and related information.
6. Instrument Approach Procedures (IAP) Charts—Portray the aeronautical data which is required to execute an instrument approach to an airport. These charts depict the procedures, including all related data, and the airport diagram. Each procedure is designated for use with a specific type of electronic navigation system including NDB, TACAN, VOR, ILS/MLS, and RNAV. These charts are identified by the type of navigational aid(s) which provide final approach guidance.
7. Standard Instrument Departure (SID) Charts—Designed to expedite clearance delivery and to facilitate transition between takeoff and en route operations. Each SID procedure is presented as a separate chart and may serve a single airport or more than one airport in a given geographical location.
8. Standard Terminal Arrival (STAR) Charts— Designed to expedite air traffic control arrival procedures and to facilitate transition between en route and instrument approach operations. Each STAR procedure is presented as a separate chart and may serve a single airport or more than one airport in a given geographical location.
9. Airport Taxi Charts—Designed to expedite the efficient and safe flow of ground traffic at an airport. These charts are identified by the official airport name; e.g., Washington National Airport.

*ICAO—AERONAUTICAL CHART—*A representation of a portion of the earth, its culture and relief, specifically designated to meet the requirements of air navigation.

***AFFIRMATIVE—*** Yes.

**AIR CARRIER DISTRICT OFFICE/ACDO—** An FAA field office serving an assigned geographical area, staffed with Flight Standards personnel serving the aviation industry and the general public on matters related to the certification and operation of scheduled air carriers and other large aircraft operations.

**AIRCRAFT—** Device/s that are used or intended to be used for flight in the air, and when used in air traffic control terminology, may include the flight crew.

*ICAO-AIRCRAFT*—Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

**AIRCRAFT APPROACH CATEGORY—** A grouping of aircraft based on a speed of 1.3 times the stall speed in the landing configuration at maximum gross landing weight. An aircraft shall fit in only one category. If it is necessary to maneuver at speeds in excess of the upper limit of a speed range for a category, the minimums for the next higher category should be used. For example, an aircraft which falls in Category A, but is circling to land at a speed in excess of 91 knots, should use the approach Category B minimums when circling to land. The categories are as follows:

1. Category A—Speed less than 91 knots.
2. Category B—Speed 91 knots or more but less than 121 knots.
3. Category C—Speed 121 knots or more but less than 141 knots.
4. Category D—Speed 141 knots or more but less than 166 knots.
5. Category E—Speed 166 knots or more.

(Refer to FAR Parts 1 and 97)

**AIRCRAFT CLASSES—** For the purposes of Wake Turbulence Separation Minima, ATC classifies aircraft as Heavy, Large, and Small as follows:

1. Heavy—Aircraft capable of takeoff weights of 300,000 pounds or more whether or not they are operating at this weight during a particular phase of flight.
2. Large—Aircraft of more than 12,500 pounds, maximum certificated takeoff weight, up to 300,000 pounds.
3. Small—Aircraft of 12,500 pounds or less maximum certificated takeoff weight. (Refer to AIM)

**AIR DEFENSE EMERGENCY—** A military emergency condition declared by a designated authority. This condition exists when an attack upon the continental U.S., Alaska, Canada, or U.S. installations in Greenland by hostile aircraft or missiles is considered probable, is imminent, or is taking place. (Refer to AIM)

**AIR DEFENSE IDENTIFICATION ZONE/ADIZ—** The area of airspace over land or water, extending upward from the surface, within which the ready identification, the location, and the control of aircraft are required in the interest of national security.

1. Domestic Air Defense Identification Zone— An ADIZ within the United States along an international boundary of the United States.
2. Coastal Air Defense Identification Zone— An ADIZ over the coastal waters of the United States.
3. Distant Early Warning Identification Zone (DEWIZ)— An ADIZ over the coastal waters of the State of Alaska.

ADIZ locations and operating and flight plan requirements for civil aircraft operations are specified in FAR Part 99. (Refer to AIM)

**AIRMAN'S INFORMATION MANUAL/AIM—** A publication containing Basic Flight Information and ATC Procedures designed primarily as a pilot's instructional manual for use in the National Airspace System of the United States.

*ICAO-AERONAUTICAL INFORMATION PUBLICATION*—A publication issued by or with the authority of a state and containing aeronautical information of a lasting character essential to air navigation.

***AIRMET* /WA/AIRMAN'S METEOROLOGICAL INFORMATION—** In-flight weather advisories issued only to amend the area forecast concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment, instrumentation, or pilot qualifications. AIRMET's concern weather of less severity than that covered by SIGMET's or Convective SIGMET's. AIRMET's cover moderate icing, moderate turbulence, sustained winds of 30 knots or more at the surface, widespread areas of ceilings less than 1,000 feet and/or visibility less than 3 miles, and extensive mountain obscurement. (See SIGMET, Convective SIGMET, and CWA) (Refer to AIM)

**AIR NAVIGATION FACILITY—** Any facility used in, available for use in, or designed for use in, aid of air navigation, including landing areas, lights, any apparatus or equipment for disseminating weather information, for signaling, for radio-directional finding, or for radio or other electrical communication, and any other structure or mechanism having a similar purpose for guiding or controlling flight in the air or the landing and take-off of aircraft. (See Navigational Aid)

**AIRPORT—** An area on land or water that is used or intended to be used for the landing and takeoff of aircraft and includes its buildings and facilities, if any.

**AIRPORT ADVISORY AREA—** The area within ten miles of an airport without a control tower or where the tower is not in operation, and on which a Flight Service Station is located. (See Airport Advisory Service) (Refer to AIM)

**AIRPORT ADVISORY SERVICE/AAS—** A service provided by flight service stations located at airports not serviced by a control tower. This service consists of providing information to arriving and departing aircraft concerning wind direction and speed, favored runway, altimeter setting, pertinent known traffic, pertinent known field conditions, airport taxi routes and traffic patterns, and authorized instrument approach procedures. This information is advisory in nature and does not constitute an ATC clearance. (See Airport Advisory Area)

**AIRPORT ELEVATION/FIELD ELEVATION—** The highest point of an airport's usable runways measured in feet from mean sea level. (See Touchdown Zone Elevation)

*ICAO-AERODROME ELEVATION*—The elevation of the highest point of the landing area.

**AIRPORT/FACILITY DIRECTORY**— A publication designed primarily as a pilot's operational manual containing all airports, seaplane bases, and heliports open to the public including communications data, navigational facilities, and certain special notices and procedures. This publication is issued in seven volumes according to geographical area.

**AIRPORT INFORMATION DESK/AID**— An airport unmanned facility designed for pilot self-service briefing, flight planning, and filing of flight plans. (Refer to AIM)

**AIRPORT LIGHTING**— Various lighting aids that may be installed on an airport. Types of airport lighting include:

1. Approach Light System/ALS—An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams in a directional pattern by which the pilot aligns the aircraft with the extended centerline of the runway on his final approach for landing.

   Condenser-Discharge Sequential Flashing Lights/Sequenced Flashing Lights may be installed in conjunction with the ALS at some airports. Types of Approach Light Systems are:

   a. ALSF-1—Approach Light System with Sequenced Flashing Lights in ILS Cat-I configuration.
   b. ALSF-2—Approach Light System with Sequenced Flashing Lights in ILS Cat-II configuration. The ALSF-2 may operate as an SSALR when weather conditions permit.
   c. SSALF—Simplified Short Approach Light System with Sequenced Flashing Lights.
   d. SSALR—Simplified Short Approach Light System with Runway Alignment Indicator Lights.
   e. MALSF—Medium Intensity Approach Light System with Sequenced Flashing Lights.
   f. MALSR—Medium Intensity Approach Light System with Runway Alignment Indicator Lights.
   g. LDIN—Sequenced Flashing Lead-in Lights.
   h. RAIL—Runway Alignment Indicator Lights (Sequenced Flashing Lights which are installed only in combination with other light systems).
   i. ODALS—Omnidirectional Approach Lighting System consists of seven omnidirectional flashing lights located in the approach area of a nonprecision runway. Five lights are located on the runway centerline extended with the first light located 300 feet from the threshold and extending at equal intervals up to 1,500 feet from the threshold. The other two lights are located, one on each side of the runway threshold, at a lateral distance of 40 feet from the runway edge, or 75 feet from the runway edge when installed on a runway equipped with a VASI. (Refer to Order 6850.2A)

2. Runway Lights/Runway Edge Lights—Lights having a prescribed angle of emission used to define the lateral limits of a runway. Runway lights are uniformly spaced at intervals of approximately 200 feet, and the intensity may be controlled or preset.

3. Touchdown Zone Lighting—Two rows of tranverse light bars located symmetrically about the runway centerline normally at 100 foot intervals. The basic system extends 3,000 feet along the runway.

4. Runway Centerline Lighting—Flush centerline lights spaced at 50-foot intervals beginning 75 feet from the landing threshold and extending to within 75 feet of the opposite end of the runway.

5. Threshold Lights—Fixed green lights arranged symmetrically left and right of the runway centerline, identifying the runway threshold.

6. Runway End Identifier Lights/REIL—Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

7. Visual Approach Slope Indicator/VASI— An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is "on path" if he sees red/white, "above path' if white/white, and "below path" if red/red. Some airports serving large aircraft have three-bar VASIs which provide two visual glide paths to the same runway.

8. Boundary Lights—Lights defining the perimeter of an airport or landing area. (Refer to AIM)

**AIRPORT MARKING AIDS**— Markings used on runway and taxiway surfaces to identify a specific runway, a runway threshold, a centerline, a hold line, etc. A runway should be marked in accordance with its present usage such as:

1. Visual.

2. Nonprecision instrument.

3. Precision instrument. (Refer to AIM)

**AIRPORT RADAR SERVICE AREA / ARSA**— (See Controlled Airspace)

**AIRPORT ROTATING BEACON**— A visual NAVAID operated at many airports. At civil airports, alternating white and green flashes indicate the location of the airport. At military airports, the beacons flash alternately white and green, but are differentiated from civil beacons by dualpeaked (two quick) white flashes between the green flashes. (See Special VFR Operations, Instrument Flight Rules) (Refer to AIM, Rotating Beacons)

*ICAO-AERODROME BEACON*—Aeronautical beacon used to indicate the location of an aerodrome.

**AIRPORT SURFACE DETECTION EQUIPMENT/ASDE—** Radar equipment specifically designed to detect all principal features on the surface of an airport, including aircraft and vehicular traffic, and to present the entire image on a radar indicator console in the control tower. Used to augment visual observation by tower personnel of aircraft and/or vehicular movements on runways and taxiways.

**AIRPORT SURVEILLANCE RADAR/ASR—** Approach control radar used to detect and display an aircraft's position in the terminal area. ASR provides range and azimuth information but does not provide elevation data. Coverage of the ASR can extend up to 60 miles.

**AIRPORT TRAFFIC AREA—** Unless otherwise specifically designated in FAR Part 93, that airspace within a horizontal radius of 5 statute miles from the geographical center of any airport at which a control tower is operating, extending from the surface up to, but not including, an altitude of 3,000 feet above the elevation of an airport. Unless otherwise authorized or required by ATC, no person may operate an aircraft within an airport traffic area except for the purpose of landing at or taking off from an airport within that area. ATC authorizations may be given as individual approval of specific operations or may be contained in written agreements between airport users and the tower concerned. (Refer to FAR, Parts 1 and 91).

**AIRPORT TRAFFIC CONTROL SERVICE—** A service provided by a control tower for aircraft operating on the movement area and in the vicinity of an airport. (See Movement Area, Tower)

*ICAO-AERODROME CONTROL SERVICE*—Air traffic control service for aerodrome traffic.

**AIR ROUTE SURVEILLANCE RADAR/ARSR—** Air route traffic control center (ARTCC) radar used primarily to detect and display an aircraft's position while en route between terminal areas. The ARSR enables controllers to provide radar air traffic control service when aircraft are within the ARSR coverage. In some instances, ARSR may enable an ARTCC to provide terminal radar services similar to but usually more limited than those provided by a radar approach control.

**AIR ROUTE TRAFFIC CONTROL CENTER/ARTCC—** A facility established to provide air traffic control service to aircraft operating on IFR flight plans within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft. (See NAS Stage A, En Route Air Traffic Control Service) (Refer to AIM)

**AIRSPEED—** The speed of an aircraft relative to its surrounding air mass. The unqualified term "airspeed' means one of the following:

1. Indicated Airspeed—The speed shown on the aircraft airspeed indicator. This is the speed used in pilot/controller communications under the general term "airspeed." (Refer to FAR Part 1)
2. True Airspeed—The airspeed of an aircraft relative to undisturbed air. Used primarily in flight planning and en route portion of flight. When used in pilot/controller communications, it is referred to as "true airspeed" and not shortened to "airspeed."

**AIRSTART—** The starting of an aircraft engine while the aircraft is airborne, preceded by engine shutdown during training flights or by actual engine failure.

**AIR TAXI—** Used to describe a helicopter/VTOL aircraft movement conducted above the surface but normally not above 100 feet AGL. The aircraft may proceed either via hover taxi or flight at speeds more than 20 knots. The pilot is solely responsible for selecting a safe airspeed/altitude for the operation being conducted. (See Hover Taxi) (Refer to AIM)

**AIR TRAFFIC—** Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

*ICAO—AIR TRAFFIC*—All aircraft in flight or operating on the maneuvering area of an aerodrome.

**AIR TRAFFIC CLEARANCE/ATC CLEARANCE—** An authorization by air traffic control, for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace. (See ATC Instructions)

*ICAO—AIR TRAFFIC CONTROL CLEARANCE*—Authorization for an aircraft to proceed under conditions specified by an air traffic control unit.

**AIR TRAFFIC CONTROL/ATC—** A service operated by appropriate authority to promote the safe, orderly and expeditious flow of air traffic.

*ICAO—AIR TRAFFIC CONTROL SERVICE*—A service provided for the purpose of:

1. Preventing collisions:
   a. Between aircraft, and
   b. On the maneuvering area between aircraft and obstructions, and
2. Expediting and maintaining an orderly flow of air traffic.

**AIR TRAFFIC CONTROL COMMAND CENTER/ATCCC—** An Air Traffic Operations Service facility consisting of four operational units.

1. Central Flow Control Function/CFCF—Responsible for coordination and approval of all major intercenter flow control restrictions on a system basis in order to obtain maximum utilization of the airspace. (See Fuel Advisory Departure, Quota Flow Control)
2. Central Altitude Reservation Function/CARF—Responsible for coordinating, planning, and approving special user requirements under the Altitude Reservation (ALTRV) concept. (See Altitude Reservation)

3. Airport Reservation Office/ARO—Responsible for approving IFR flights at designated high density traffic airports (John F. Kennedy, LaGuardia, O'Hare, and Washington National) during specified hours. (Refer to FAR Part 93 and Airport/Facility Directory)

4. ATC Contingency Command Post—A facility which enables the FAA to manage the ATC system when significant portions of the system's capabilities have been lost or are threatened.

**AIR TRAFFIC CONTROL SERVICE—** (See Air Traffic Control)

**AIR TRAFFIC CONTROL SPECIALIST/CONTROLLER—** A person authorized to provide air traffic control service. (See Air Traffic Control, Flight Service Station)

*ICAO—CONTROLLER—*A person authorized to provide air traffic control services.

**AIRWAY BEACON—** Used to mark airway segments in remote mountain areas. The light flashes Morse Code to identify the beacon site. (Refer to AIM)

**AIRWAY/FEDERAL AIRWAY—** A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids. (Refer to FAR Part 71, AIM)

*ICAO-AIRWAY—*A control area or portion thereof established in the form of corridor equipped with radio navigational aids.

**ALERT AREA—** (See Special Use Airspace)

**ALERT NOTICE/ALNOT—** A message sent by a flight service station (FSS) or an air route traffic control center (ARTCC) that requests an extensive communication search for overdue, unreported, or missing aircraft.

**ALPHANUMERIC DISPLAY/DATA BLOCK—** Letters and numerals used to show identification, altitude, beacon code, and other information concerning a target on a radar display. (See Automated Radar Terminal Systems, NAS Stage A)

**ALTERNATE AIRPORT—** An airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.

*ICAO-ALTERNATE AERODROME—*An aerodrome specified in the flight plan to which a flight may proceed when it becomes inadvisable to land at the aerodrome of intended landing.

**ALTIMETER SETTING—** The barometric pressure reading used to adjust a pressure altimeter for variations in existing atmospheric pressure or to the standard altimeter setting (29.92). (Refer to FAR Part 91, AIM)

**ALTITUDE—** The height of a level, point, or object measured in feet Above Ground Level (AGL) or from Mean Sea Level (MSL). (See Flight Level)

1. MSL Altitude—Altitude expressed in feet measured from mean sea level.

2. AGL Altitude—Altitude expressed in feet measured above ground level.

3. Indicated Altitude—The altitude as shown by an altimeter. On a pressure or barometric altimeter it is altitude as shown uncorrected for instrument error and uncompensated for variation from standard atmospheric conditions.

*ICAO-ALTITUDE—*The vertical distance of a level, a point or an object considered as a point, measured from mean sea level.

***ALTITUDE READOUT/AUTOMATIC ALTITUDE REPORT—*** An aircraft's altitude, transmitted via the Mode C transponder feature, that is visually displayed in 100-foot increments on a radar scope having readout capability. (See Automated Radar Terminal Systems, NAS Stage A, Alphanumeric Display) (Refer to AIM)

**ALTITUDE RESERVATION/ALTRV—** Airspace utilization under prescribed conditions normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished. ALTRVs are approved by the appropriate FAA facility. (See Air Traffic Control Command Center)

**ALTITUDE RESTRICTION—** An altitude or altitudes, stated in the order flown, which are to be maintained until reaching a specific point or time. Altitude restrictions may be issued by ATC due to traffic, terrain, or other airspace considerations.

***ALTITUDE RESTRICTIONS ARE CANCELED—*** Adherence to previously imposed altitude restrictions is no longer required during a climb or descent.

**APPROACH CLEARANCE—** Authorization by ATC for a pilot to conduct an instrument approach. The type of instrument approach for which a clearance and other pertinent information is provided in the approach clearance when required. (See Instrument Approach Procedure, Cleared for Approach) (Refer to AIM and FAR Part 91)

**APPROACH CONTROL FACILITY—** A terminal ATC facility that provides approach control service in a terminal area. (See Approach Control Service, Radar Approach Control Facility.

**APPROACH CONTROL SERVICE—** Air traffic control service provided by an approach control facility for arriving and departing VFR/IFR aircraft and, on occasion, en route aircraft. At some airports not served by an approach control facility, the ARTCC provides limited approach control service. (Refer to AIM)

*ICAO—APPROACH CONTROL SERVICE—*Air traffic service for arriving or departing controlled flights.

**APPROACH GATE—** An imaginary point used within ATC as a basis for vectoring aircraft to the final approach course. The gate will be established along the final approach course 1 mile from the outer marker (or the fix used in lieu of the outer marker) on the side away from the airport for precision approaches and 1 mile from the final approach fix on the side away from the airport for nonprecision approaches. In either case when measured along the final approach course, the gate will be no closer than 5 miles from the landing threshold.

**APPROACH LIGHT SYSTEM—** (See Airport Lighting)

**APPROACH SEQUENCE—** The order in which aircraft are positioned while on approach or awaiting approach clearance. (See Landing Sequence)

*ICAO—APPROACH SEQUENCE—*The order in which two or more aircraft are cleared to approach to land at the aerodrome.

***APPROACH SPEED—*** The recommended speed contained in aircraft manuals used by pilots when making an approach to landing. This speed will vary for different segments of an approach as well as for aircraft weight and configuration.

**APRON/RAMP—** A defined area on an airport or heliport intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking, or maintenance. With regard to seaplanes, a ramp is used for access to the apron from the water.

*ICAO—APRON—*A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking or maintenance.

**ARC—** The track over the ground of an aircraft flying at a constant distance from a navigational aid by reference to distance measuring equipment (DME).

**AREA NAVIGATION/RNAV—** A method of navigation that permits aircraft operation on any desired course within the coverage of station-referenced navigation signals or within the limits of a self-contained system capability. Random Area Navigation routes are direct routes, based on area navigation capability, between waypoints defined in terms of latitude/longitude coordinates, degree/distance fixes, or offsets from published or established routes/airways at a specified distance and direction. The major types of equipment are:

1. VORTAC referenced or Course Line Computer (CLC) systems, which account for the greatest number of RNAV units in use. To function, the CLC must be within the service range of a VORTAC.
2. OMEGA/VLF, although two separate systems, can be considered as one operationally. A long-range navigation system based upon Very Low Frequency radio signals transmitted from a total of 17 stations worldwide.
3. Inertial (INS) systems, which are totally self-contained and require no information from external references. They provide aircraft position and navigation information in response to signals resulting from inertial effects on components within the system.
4. MLS Area Navigation (MLS/RNAV), which provides area navigation with reference to an MLS ground facility.

   Random Area Navigation routes are direct routes, based on area navigation capability, between waypoints defined in terms of latitude/longitude coordinates, degree/distance fixes, or offsets from published or established routes/airways at a specified distance and direction.
5. LORAN-C is a long-range radio navigation system that uses ground waves transmitted at low frequency to provide user position information at ranges of up to 600 to 1,200 nautical miles at both en route and approach altitudes. The useable signal coverage areas are determined by the signal-to-noise ratio, the envelope-to -cycle difference, and the geometric relationship between the positions of the user and the transmitting stations.

*ICAO—AREA NAVIGATION/RNAV—*A method of navigation which permits aircraft operation on any desired flight path within the coverage of station-referenced navigation aids or within the limits of the capability of self-contained aids or a combination of these.

**ARMY AVIATION FLIGHT INFORMATION BULLETIN/USAFIB—** A bulletin that provides air operation data covering Army, National Guard, and Army Reserve aviation activities.

**ARRESTING SYSTEM—** A safety device consisting of two major components, namely, engaging or catching devices and energy absorption devices for the purpose of arresting both tailhook and/or nontailhook-equipped aircraft. It is used to prevent aircraft from overrunning runways when the aircraft cannot be stopped after landing or during aborted takeoff. Arresting systems have various names; e.g., arresting gear, hook device, wire barrier cable. (See Abort) (Refer to AIM)

**ARRIVAL TIME—** The time an aircraft touches down on arrival.

**ARTCC—** (See Air Route Traffic Control Center)

**ASR APPROACH—** (See Surveillance Approach)

**ATC ADVISES—** Used to prefix a message of noncontrol information when it is relayed to an aircraft by other than an air traffic controller. (See Advisory)

**ATC ASSIGNED AIRSPACE/ATCAA—** Airspace of defined vertical/lateral limits, assigned by ATC, for the purpose of providing air traffic segregation between the specified activities being conducted within the assigned airspace and other IFR air traffic. (See Military Operations Area, Alert Area)

**ATC CLEARANCE—** (See Air Traffic Clearance)

**ATC CLEARS—** Used to prefix an ATC clearance when it is relayed to an aircraft by other than an air traffic controller.

**ATC INSTRUCTIONS—** Directives issued by air traffic control for the purpose of requiring a pilot to take specific actions; e.g., "Turn left heading two five zero," "Go around," "Clear the runway." (Refer to FAR Part 91)

**ATCRBS—** (See Radar)

**ATC REQUESTS—** Used to prefix an ATC request when it is relayed to an aircraft by other than an air traffic controller.

**AUTOMATED RADAR TERMINAL SYSTEMS/ ARTS—** The generic term for the ultimate in functional capability afforded by several automation systems. Each differs in functional capabilities and equipment. ARTS plus a suffix roman numeral denotes a specific system. A following letter indicates a major modification to that system. In general, an ARTS displays for the terminal controller aircraft identification, flight plan data, other flight associated information; e.g., altitude, speed, and aircraft position symbols in conjunction with his radar presentation. Normal radar co-exists with the alphanumeric display. In addition to enhancing visualization of the air traffic situation, ARTS facilitate intra/inter-facility transfer and coordination of flight information. These capabilities are enabled by specially designed computers and subsystems tailored to the radar and communications equipments and operational requirements of each automated facility. Modular design permits adoption of improvements in computer software and electronic technologies as they become available while retaining the characteristics unique to each system.

1. ARTS II—A programmable nontracking, computer- aided display subsystem capable of modular expansion. ARTS II systems provide a level of automated air traffic control capability at terminals having low to medium activity. Flight identification and altitude may be associated with the display of secondary radar targets. The system has the capability of communicating with ARTCC's and other ATRS II, IIA, III, and IIIA facilities.
2. ARTS IIA—A programmable radar-tracking computer subsystem capable of modular expansion. The ARTS IIA detects, tracks, and predicts secondary radar targets. The targets are displayed by means of computer- generated symbols, ground speed, and flight plan data. Although it does not track primary radar targets, they are displayed coincident with the secondary radar as well as the symbols and alphanumerics. The system has the capability of communicating with ARTCC's and other ARTS II, IIA, III, and IIIA facilities.
3. ARTS III—The Beacon Tracking Level (BTL) of the modular programmable automated radar terminal system in use at medium to high activity terminals. ARTS III detects, tracks, and predicts secondary radar-derived aircraft targets. These are displayed by means of computer-generated symbols and alphanumeric characters depicting flight identification, aircraft altitude, ground speed, and flight plan data. Although it does not track primary targets, they are displayed coincident with the secondary radar as well as the symbols and alphanumerics. The system has the capability of communicating with ARTCC's and other ARTS III facilities.
4. ARTS IIIA—The Radar Tracking and Beacon Tracking Level (RT&BTL) of the modular, programmable automated radar terminal system. ARTS IIIA detects, tracks, and predicts primary as well as secondary radar-derived aircraft targets. This more sophisticated computer-driven system upgrades the existing ARTS III system by providing improved tracking, continuous data recording, and fail-soft capabilities.

**AUTOMATIC ALTITUDE REPORTING—** That function of a transponder which responds to Mode C interrogations by transmitting the aircraft's altitude in 100-foot increments.

**AUTOMATIC CARRIER LANDING SYSTEM/ ACLS—** U.S. Navy final approach equipment consisting of precision tracking radar coupled to a computer data link to provide continuous information to the aircraft, monitoring capability to the pilot, and a backup approach system.

**AUTOMATIC DIRECTION FINDER/ADF—** An aircraft radio navigation system which senses and indicates the direction to a L/MF nondirectional radio beacon (NDB) ground transmitter. Direction is indicated to the pilot as a magnetic bearing or as a relative bearing to the longitudinal axis of the aircraft depending on the type of indicator installed in the aircraft. In certain applications, such as military, ADF operations may be based on airborne and ground transmitters in the VHF/UHF frequency spectrum. (See Bearing, Nondirectional Beacon)

**AUTOMATIC TERMINAL INFORMATION SERVICE/ATIS—** The continuous broadcast of recorded noncontrol information in selected terminal areas. Its purpose is to improve controller effectiveness and to relieve frequency congestion by automating the repetitive transmission of essential but routine information; e.g.,"Los Angeles information Alfa. One three zero zero Coordinated Universal Time. Weather, measured ceiling two thousand overcast, visibility three, haze, smoke. temperature seven one, dew point five seven, wind two five zero at five, altimeter two niner niner six. I-L-S Runway Two Five Left approach in use, Runway Two Five Right closed, advise you have Alfa." (Refer to AIM)

*ICAO—AUTOMATIC TERMINAL INFORMATION SERVICE*—The provision of current, routine information to arriving and departing aircraft by means of continuous and repetitive broadcasts throughout the day or a specified portion of the day.

**AUTOROTATION—** A rotorcraft flight condition in which the lifting rotor is driven entirely by action of the air when the rotorcraft is in motion.

1. Autorotative Landing/Touchdown Autorotation—Used by a pilot to indicate that he will be landing without applying power to the rotor.
2. Low Level Autorotation—Commences at an altitude well below the traffic pattern, usually below 100 feet AGL and is used primarily for tactical military training.
3. 180 degrees Autorotation—Initiated from a downwind heading and is commenced well inside the normal traffic pattern. "Go around" may not be possible during the latter part of this maneuver.

**AVIATION WEATHER SERVICE—** A service provided by the National Weather Service (NWS) and FAA which collects and disseminates pertinent weather information for pilots, aircraft operators, and ATC.

Available aviation weather reports and forecasts are displayed at each NWS office and FAA FSS. (See En Route Flight Advisory Service, Transcribed Weather Broadcast, Weather Advisory, Pilots Automatic Telephone Weather Answering Service) (Refer to AIM)

**AZIMUTH, MLS**—A magnetic bearing extending from an MLS navigation facility. Note: azimuth bearings are described as magnetic and are referred to as "azimuth" in radio telephone communications.

**BASE LEG**— (See Traffic Pattern)

**BEACON**— (See Radar, Nondirectional Beacon, Marker Beacon, Airport Rotating Beacon, Aeronautical Beacon, Airway Beacon))

**BEARING**— The horizontal direction to or from any point, usually measured clockwise from true north, magnetic north, or some other reference point through 360 degrees. (See Nondirectional Beacon)

**BELOW MINIMUMS**— Weather conditions below the minimums prescribed by regulation for the particular action involved; e.g., landing minimums, takeoff minimums.

**BLAST FENCE**— A barrier that is used to divert or dissipate jet or propeller blast.

**BLIND SPEED**— The rate of departure or closing of a target relative to the radar antenna at which cancellation of the primary radar target by moving target indicator (MTI) circuits in the radar equipment causes a reduction or complete loss of signal.

*ICAO—BLIND VELOCITY*—The radial velocity of a moving target such that the target is not seen on primary radars fitted with certain forms of fixed echo suppression.

**BLIND SPOT/BLIND ZONE**— An area from which radio transmissions and/or radar echoes cannot be received. The term is also used to describe portions of the airport not visible from the control tower.

**BOUNDARY LIGHTS**— (See Airport Lighting)

***BRAKING ACTION (GOOD, FAIR, POOR, OR NIL)***— A report of conditions on the airport movement area providing a pilot with a degree/quality of braking that he might expect. Braking action is reported in terms of good, fair, poor, or nil. (See Runway Condition Reading)

**BRAKING ACTION ADVISORIES**— When tower controllers have received runway braking action reports which include the terms "poor" or "nil," or whenever weather conditions are conducive to deteriorating or rapidly changing runway braking conditions, the tower will include on the ATIS broadcast the statement, "BRAKING ACTION ADVISORIES ARE IN EFFECT." During the time Braking Action Advisories are in effect, ATC will issue the latest braking action report for the runway in use to each arriving and departing aircraft. Pilots should be prepared for deteriorating braking conditions and should request current runway condition information if not volunteered by controllers. Pilots should also be prepared to provide a descriptive runway condition report to controllers after landing.

**BROADCAST**— Transmission of information for which an acknowledgement is not expected.

*ICAO—BROADCAST*—A transmission of information relating to air navigation that is not addressed to a specific station or stations.

**CALL UP**— Initial voice contact between a facility and an aircraft, using the identification of the unit being called and the unit initiating the call. (Refer to AIM)

**CARDINAL ALTITUDES OR FLIGHT LEVELS**— "Odd" or "Even" thousand-foot altitudes or flight levels; e.g., 5,000, 6,000, 7,000, FL 250, FL 260, FL 270. (See Altitude, Flight Levels)

**CEILING**— The heights above the earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as "broken," "overcast," or "obscuration," and not classified as "thin" or "partial".

*ICAO—CEILING*—The height above the ground or water of the base of the lowest layer of cloud below 6,000 meters (20,000 feet) covering more than half the sky.

**CELESTIAL NAVIGATION**— The determination of geographical position by reference to celestial bodies. Normally used in aviation as a secondary means of position determination.

**CENTER**— (See Air Route Traffic Control Center)

**CENTER'S AREA**— The specified airspace within which an air route traffic control center (ARTCC) provides air traffic control and advisory service. (See Air Route Traffic Control Center) (Refer to AIM)

**CENTER WEATHER ADVISORY/CWA**— An unscheduled weather advisory issued by Center Weather Service Unit meteorologists for ATC use to alert pilots of existing or anticipated adverse weather conditions within the next 2 hours. A CWA may modify or redefine a SIGMET. (See SIGMET, Convective SIGMET, and AIRMET) (Refer to AIM)

**CHAFF**— Thin, narrow metallic reflectors of various lengths and frequency responses, used to reflect radar energy. These reflectors when dropped from aircraft and allowed to drift downward result in large targets on the radar display.

**CHARTED VFR FLYWAYS**— Charted VFR Flyways are flight paths recommended for use to bypass areas heavily traversed by large turbine-powered aircraft. Pilot compliance with recommended flyways and associated altitudes is strictly voluntary. VFR Flyway Planning charts are published on the back of existing VFR Terminal Area charts.

**CHARTED VISUAL FLIGHT PROCEDURE (CVFP) APPROACH**— An approach wherein a radar-controlled aircraft on an IFR flight plan, operating in VFR conditions and having an ATC authorization, may proceed to the airport of intended landing via visual landmarks and altitudes depicted on a charted visual flight procedure.

***CHASE/CHASE AIRCRAFT***— An aircraft flown in proximity to another aircraft normally to observe its performance during training or testing.

**CIRCLE-TO-LAND MANEUVER/CIRCLING MANEUVER—** A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or is not desirable. This maneuver is made only after ATC authorization has been obtained and the pilot has established required visual reference to the airport (See Circle to Runway, Landing Minimums) (Refer to AIM)

***CIRCLE TO RUNWAY (RUNWAY NUMBERED)—*** Used by ATC to inform the pilot that he must circle to land because the runway in use is other than the runway aligned with the instrument approach procedure. When the direction of the circling maneuver in relation to the airport/runway is required, the controller will state the direction (eight cardinal compass points) and specify a left or right downwind or base leg as appropriate; e.g., "Cleared VOR Runway Three Six Approach circle to Runway Two Two," or "Circle northwest of the airport for a right downwind to Runway Two Two." (See Circle-to-Land Maneuver, Landing Minimums) (Refer to AIM)

***CIRCLING APPROACH—*** (See Circle-to-Land Maneuver)

**CIRCLING MINIMA—** (See Landing Minimums)

**CLEAR-AIR TURBULENCE/CAT—** Turbulence encountered in air where no clouds are present. This term is commonly applied to high-level turbulence associated with wind shear. CAT is often encountered in the vicinity of the jet stream. (See Wind Shear, Jet Stream)

***CLEARANCE—*** (See Air Traffic Clearance)

**CLEARANCE LIMIT—** The fix, point, or location to which an aircraft is cleared when issued an air traffic clearance.

*ICAO—CLEARANCE LIMIT—*The point of which an aircraft is granted an air traffic control clearance.

***CLEARANCE VOID IF NOT OFF BY (TIME)—*** Used by ATC to advise an aircraft that the departure clearance is automatically cancelled if takeoff is not made prior to a specified time. The pilot must obtain a new clearance or cancel his IFR flight plan if not off by the specified time.

*ICAO—CLEARANCE VOID TIME—* A time specified by an air traffic control unit at which a clearance ceases to be valid unless the aircraft concerned has already taken action to comply therewith.

***CLEARED AS FILED—*** Means the aircraft is cleared to proceed in accordance with the route of flight filed in the flight plan. This clearance does not include the altitude, SID, or SID Transition. (See Request Full Route Clearance) (Refer to AIM)

***CLEARED FOR (Type Of) APPROACH—*** ATC authorization for an aircraft to execute a specific instrument approach procedure to an airport; e.g., "Cleared for ILS Runway Three Six Approach." (See Instrument Approach Procedure, Approach Clearance) (Refer to AIM, FAR Part 91)

***CLEARED FOR APPROACH—*** ATC authorization for an aircraft to execute any standard or special instrument approach procedure for that airport. Normally, an aircraft will be cleared for a specific instrument approach procedure. (See Instrument Approach Procedure, Cleared for (Type of) Approach) (Refer to AIM, FAR Part 91)

***CLEARED FOR TAKEOFF—*** ATC authorization for an aircraft to depart. It is predicated on known traffic and known physical airport conditions.

***CLEARED FOR THE OPTION—*** ATC authorization for an aircraft to make a touch-and-go, low approach, missed approach, stop and go, or full stop landing at the discretion of the pilot. It is normally used in training so that an instructor can evaluate a student's performance under changing situations. (See Option Approach) (Refer to AIM)

***CLEARED THROUGH—*** ATC authorization for an aircraft to make intermediate stops at specified airports without refiling a flight plan while en route to the clearance limit.

***CLEARED TO LAND—*** ATC authorization for an aircraft to land. It is predicated on known traffic and known physical airport conditions.

**CLEARWAY—** An area beyond the takeoff runway under the control of airport authorities within which terrain or fixed obstacles may not extend above specified limits. These areas may be required for certain turbine-powered operations and the size and upward slope of the clearway will differ depending on when the aircraft was certificated. (Refer to FAR Part 1)

**CLIMBOUT—** That portion of flight operation between takeoff and the initial cruising altitude. in the event of two-way communication failure. It also provides altitude

***CLIMB TO VFR—*** ATC authorization for an aircraft to climb to VFR conditions within a control zone when the only weather limitation is restricted visibility. The aircraft must remain clear of clouds while climbing to VFR. (See Special VFR) (Refer to AIM)

**CLOSED RUNWAY—** A runway that is unusable for aircraft operations. Only the airport management/military operations office can close a runway.

**CLOSED TRAFFIC—** Successive operations involving takeoffs and landings or low approaches where the aircraft does not exit the traffic pattern.

**CLUTTER—** In radar operations, clutter refers to the reception and visual display of radar returns caused by precipitation, chaff, terrain, numerous aircraft targets, or other phenomena. Such returns may limit or preclude ATC from providing services based on radar. (See Ground Clutter, Chaff, Precipitation, Target)

*ICAO—Radar Clutter—*The visual indication on a radar display of unwanted signals.

**COASTAL FIX—** A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

**CODES/TRANSPONDER CODES—** The number assigned to a particular multiple pulse reply signal transmitted by a transponder. (See Discrete Code)

**COMBINED CENTER-RAPCON/CERAP—** An air traffic facility which combines the functions of an ARTCC and a radar approach control facility. (See Air Route Traffic Control Center/ARTCC, Radar Approach Control Facility)

**COMMON ROUTE/COMMON PORTION—** That segment of a North American Route between the inland navigation facility and the coastal fix.

**COMMON TRAFFIC ADVISORY FREQUENCY/ CTAF—** A frequency designed for the purpose of carrying out airport advisory practices while operating to or from an uncontrolled airport. The CTAF may be a UNICOM, Multicom, FSS, or tower frequency and is identified in appropriate aeronautical publications. (Refer to AC—90-42C)

**COMPASS LOCATOR—** A low power, low or medium frequency (L/MF) radio beacon installed at the site of the outer or middle marker of an instrument landing system (ILS). It can be used for navigation at distances of approximately 15 miles or as authorized in the approach procedure.

1. Outer Compass Locator/LOM—A compass locator installed at the site of the outer marker of an instrument landing system. (See Outer Marker)
2. Middle Compass Locator/LMM—A compass locator installed at the site of the middle marker of an instrument landing system. (See Middle Marker)

*ICAO—LOCATOR*—An LM/MF NDB used as an aid to final approach.

**COMPASS ROSE—** A circle, graduated in degrees, printed on some charts or marked on the ground at an airport. It is used as a reference to either true or magnetic direction.

**COMPOSITE FLIGHT PLAN—** A flight plan which specifies VFR operation for one portion of flight and IFR for another portion. It is used primarily in military operations. (Refer to AIM)

**COMPOSITE ROUTE SYSTEM—** An organized oceanic route structure, incorporating reduced lateral spacing between routes, in which composite separation is authorized.

**COMPOSITE SEPARATION—** A method of separating aircraft in a composite route system where, by management of route and altitude assignments, a combination of half the lateral minimum specified for the area concerned and half the vertical minimum is applied.

**COMPULSORY REPORTING POINTS—** Reporting points which must be reported to ATC. They are designated on aeronautical charts by solid triangles or filed in a flight plan as fixes selected to define direct routes. These points are geographical locations which are defined by navigation aids/fixes. Pilots should discontinue position reporting over compulsory reporting points when informed by ATC that their aircraft is in "radar contact."

**CONFLICT ALERT—** A function of certain air traffic control automated systems designed to alert radar controllers to existing or pending situations recognized by the program parameters that require his immediate attention/action.

**CONFLICT RESOLUTION—** The resolution of potential conflictions between IFR aircraft and VFR aircraft that are radar identified and in communication with ATC by ensuring that radar targets do not touch. Pertinent traffic advisories shall be issued when this procedure is applied. Note: This separation procedure will not be provided utilizing fully digitized radar systems. (See Controlled Airspace—Airport Radar Service Area / ARSA, Outer Area)

**CONSOLAN—** A low frequency, long-distance NAVAID used principally for transoceanic navigations.

**CONTACT—**

1. Establish communication with (followed by the name of the facility and, if appropriate, the frequency to be used).
2. A flight condition wherein the pilot ascertains the attitude of his aircraft and navigates by visual reference to the surface. (See Contact Approach, Radar Contact)

***CONTACT APPROACH—*** An approach wherein an aircraft on an IFR flight plan, having an air traffic control authorization, operating clear of clouds with at least 1 mile flight visibility and a reasonable expectation of continuing to the destination airport in those conditions, may deviate from the instrument approach procedure and proceed to the destination airport by visual reference to the surface. This approach will only be authorized when requested by the pilot and the reported ground visibility at the destination airport is at least 1 statute mile. (Refer to AIM)

**CONTERMINOUS U.S.—** The 48 adjoining States and the District of Columbia.

**CONTINENTAL CONTROL AREA—** (See Controlled Airspace)

**CONTINENTAL UNITED STATES—** The 49 States located on the continent of North America and the District of Columbia.

**CONTROL AREA—** (See Controlled Airspace)

**CONTROLLED AIRSPACE—** Airspace designated as a control zone, airport radar service area, terminal control area, transition area, control area, continental control area, and positive control area within which some or all aircraft may be subject to air traffic control. (Refer to AIM, FAR Part 71)

*ICAO—CONTROLLED AIRSPACE*—Airspace of defined dimensions within which air traffic control service is provided to controlled flights.

**Types of U.S. Controlled Airspace:**

1. Control Zone—Controlled airspace which extends upward from the surface of the earth and terminates at the base of the continental control area. Control zones that do not underlie the continental control area have no upper limit. A control zone may include one or more airports and is normally a circular area with a radius of 5 statute

miles and any extensions necessary to include instrument approach and departure paths.

*ICAO—Control Zone*—A controlled airspace extending upwards from the surface of the earth to a specified upper limit.

2. Airport Radar Service Area / ARSA—Regulatory airspace surrounding designated airports wherein ATC provides radar vectoring and sequencing on a full-time basis for all IFR and VFR aircraft. The service provided in an ARSA is called ARSA service which includes: IFR/IFR—standard IFR separation; IFR/VFR—traffic advisories and conflict resolution; and VFR/VFR—traffic advisories and, as appropriate, safety alerts. The AIM contains an explanation of ARSA. The ARSA's are depicted on VFR aeronautical charts. (See Conflict Resolution, Outer Area) (Refer to AIM, Airport/Facility Directory, FAR Part 91)
3. Terminal Control Area/TCA—Controlled airspace extending upward from the surface or higher to specified altitudes, within which all aircraft are subject to operating rules and pilot and equipment requirements specified in FAR Part 91. TCA's are depicted on Sectional, World Aeronautical, En Route Low Altitude, DOD FLIP, and TCA charts. (Refer to FAR Part 91, AIM)

*ICAO—Terminal Control Area*—A control area normally established at the confluence of ATS routes in the vicinity of one or more major aerodromes.

4. Transition Area—Controlled airspace extending upward from 700 feet or more above the surface of the earth when designated in conjunction with an airport for which an approved instrument approach procedure has been prescribed; or from 1,200 feet or more above the surface of the earth when designated in conjunction with airway route structures or segments. Unless otherwise specified, transition areas terminate at the base of the overlying controlled airspace. Transition areas are designed to contain IFR operations in controlled airspace during portions of the terminal operation and while transiting between the terminal and en route environment.
5. Control Area—Airspace designated as Colored Federal airways, VOR Federal airways, control areas associated with jet routes outside the continental control area (FAR 71.161), additional control areas (FAR 71.163), control area extensions (FAR 71.165), and area low routes. Control areas do not include the continental control area, but unless otherwise designated, they do include the airspace between a segment of a main VOR Federal airway and its associated alternate segments with the vertical extent of the area corresponding to the vertical extent of the related segment of the main airway. The vertical extent of the various categories of airspace contained in control areas is defined in FAR Part 71.

*ICAO—Control Area*—A controlled airspace extending upward from a specified limit above the earth.

6. Continental Control Area—The airspace of the 48 contiguous States, the District of Columbia and Alaska, excluding the Alaska peninsula west of Long. 160° 00′ 00″W, at and above 14,500 feet MSL, but does not include:
    a. The airspace less than 1,500 feet above the surface of the earth; or
    b. Prohibited and restricted areas, other than the restricted areas listed in FAR Part 71.
7. Positive Control Area/PCA—Airspace designated in FAR, Part 71 within which there is positive control of aircraft. Flight in PCA is normally conducted under instrument flight rules. PCA is designated throughout most of the conterminous United States and its vertical extent is from 18,000 feet MSL to and including flight level 600. In Alaska PCA does not include the airspace less than 1,500 feet above the surface of the earth nor the airspace over the Alaska Peninsula west of longitude 160 degrees West. Rules for operating in PCA are found in FARs 91.97 and 91.24.

**CONTROLLED DEPARTURE TIME (CDT) PROGRAMS—** These programs are the flow control process whereby aircraft are held on the ground at the departure airport when delays are projected to occur in either the en route system or the terminal of intended landing. The purpose of these programs is to reduce congestion in the air traffic system or to limit the duration of airborne holding in the arrival center or terminal area. A CDT is a specific departure slot shown on the flight plan as an expected departure clearance time (EDCT).

**CONTROLLER—** (See Air Traffic Control Specialist)

**CONTROL SECTOR—** An airspace area of defined horizontal and vertical dimensions for which a controller or group of controllers has air traffic control responsibility, normally within an air route traffic control center or an approach control facility. Sectors are established based on predominant traffic flows, altitude strata, and controller workload. Pilot-communications during operations within a sector are normally maintained on discrete frequencies assigned to the sector. (See Discrete Frequency)

**CONTROL SLASH—** A radar beacon slash representing the actual position of the associated aircraft. Normally, the control slash is the one closest to the interrogating radar beacon site. When ARTCC radar is operating in narrowband (digitized) mode, the control slash is converted to a target symbol.

**CONTROL ZONE—** (See Controlled Airspace)

***CONVECTIVE SIGMET* /WST/CONVECTIVE SIGNIFICANT METEOROLOGICAL INFORMATION—** A weather advisory concerning convective weather significant to the safety of all aircraft. Convective SIGMET's are issued for tornadoes, lines of thunderstorms, embedded thunderstorms of any intensity level, areas of thunderstorms greater than or equal to VIP level 4 with an areal coverage of 4/10 (40%) or more, and hail 3/4 inch or greater. (See SIGMET, CWA, and AIRMET) (Refer to AIM)

**COORDINATES—** The intersection of lines of reference, usually expressed in degrees/minutes/seconds of latitude and longitude, used to determine position or location.

**COORDINATION FIX—** The fix in relation to which facilities will handoff, transfer control of an aircraft, or coordinate flight progress data. For terminal facilities, it may also serve as a clearance for arriving aircraft.

**CORRECTION—** An error has been made in the transmission and the correct version follows.

**COURSE—**

1. The intended direction of flight in the horizontal plane measured in degrees from north.
2. The ILS localizer signal pattern usually specified as the front course or the back course.
3. The intended track along a straight, curved, or segmented MLS path.

(See Bearing, Radial, Instrument Landing System, Microwave Landing System)

**CRITICAL ENGINE—** The engine which, upon failure, would most adversely affect the performance or handling qualities of an aircraft.

***CROSS (FIX) AT (ALTITUDE)—*** Used by ATC when a specific altitude restriction at a specified fix is required.

***CROSS (FIX) AT OR ABOVE (ALTITUDE)—*** Used by ATC when an altitude restriction at a specified fix is required. It does not prohibit the aircraft from crossing the fix at a higher altitude than specified; however, the higher altitude may not be one that will violate a succeeding altitude restriction or altitude assignment. (See Altitude Assignment, Altitude Restriction.) (Refer to AIM)

***CROSS (FIX) AT OR BELOW (ALTITUDE)—*** Used by ATC when a maximum crossing altitude at a specific fix is required. It does not prohibit the aircraft from crossing the fix at a lower altitude; however, it must be at or above the minimum IFR altitude. (See Minimum IFR Altitude, Altitude Restriction) (Refer to FAR Part 91)

**CROSSWIND—**

1. When used concerning the traffic pattern, the word means "crosswind leg." (See Traffic Pattern)
2. When used concerning wind conditions, the word means a wind not parallel to the runway or the path of an aircraft. (See Crosswind Component)

**CROSSWIND COMPONENT—** The wind component measured in knots at 90 degrees to the longitudinal axis of the runway.

***CRUISE—*** Used in an ATC clearance to authorize a pilot to conduct flight at any altitude from the minimum IFR altitude up to and including the altitude specified in the clearance. The pilot may level off at any intermediate altitude within this block of airspace. Climb/descent within the block is to be made at the discretion of the pilot. However, once the pilot starts descent and verbally reports leaving an altitude in the block, he may not return to that altitude without additional ATC clearance. Further, it is approval for the pilot to proceed to and make an approach at destination airport and can be used in conjunction with:

1. An airport clearance limit at locations with a standard/special instrument approach procedure. The FAR's require that if an instrument letdown to an airport is necessary, the pilot shall make the letdown in accordance with a standard/special instrument approach procedure for that airport, or
2. An airport clearance limit at locations that are within/below/outside controlled airspace and without a standard/special instrument approach procedure. Such a clearance is NOT AUTHORIZATION for the pilot to descend under IFR conditions below the applicable minimum IFR altitude nor does it imply that ATC is exercising control over aircraft in uncontrolled airspace; however, it provides a means for the aircraft to proceed to destination airport, descend, and land in accordance with applicable FAR's governing VFR flight operations. Also, this provides search and rescue protection until such time as the IFR flight plan is closed. (See Instrument Approach Procedure)

**CRUISING ALTITUDE/LEVEL—** An altitude or flight level maintained during en route level flight. This is a constant altitude and should not be confused with a cruise clearance. (See Altitude)

*ICAO—CRUISING LEVEL—*A level maintained during a significant portion of a flight.

**DECISION HEIGHT/DH—** With respect to the operation of aircraft, means the height at which a decision must be made during an ILS, MLS, or PAR instrument approach to either continue the approach or to execute a missed approach.

*ICAO—DECISION HEIGHT—*A specified height at which a missed approach must be initiated if the required visual reference to continue the approach to land has not been established.

**DECODER—** The device used to decipher signals received from ATCRBS transponders to effect their display as select codes. (See Codes, Radar)

**DEFENSE VISUAL FLIGHT RULES/DVFR—** Rules applicable to flights within an ADIZ conducted under the visual flight rules in FAR, Part 91. (See Air Defense Identification Zone) (Refer to FAR, Part 99)

**DELAY INDEFINITE (REASON IF KNOWN) EXPECT FURTHER CLEARANCE (TIME)—** Used by ATC to inform a pilot when an accurate estimate of the delay time and the reason for the delay cannot immediately be determined; e.g., a disabled aircraft on the runway, terminal or center area saturation, weather below landing minimums, etc. (See Expect Further Clearance)

**DEPARTURE CONTROL—** A function of an approach control facility providing air traffic control service for departing IFR and, under certain conditions, VFR aircraft. (See Approach Control) (Refer to AIM)

**DEPARTURE TIME—** The time an aircraft becomes airborne.

**DEVIATIONS—**

1. A departure from a current clearance, such as an off course maneuver to avoid weather or turbulence.
2. Where specifically authorized in the FAR's and requested by the pilot, ATC may permit pilots to deviate from certain regulations. (Refer to AIM)

**DF APPROACH PROCEDURE—** Used under emergency conditions where another instrument approach procedure cannot be executed. DF guidance for an instrument approach is given by ATC facilities with DF capability. (See DF Guidance, Direction Finder) (Refer to AIM)

**DF FIX—** The geographical location of an aircraft obtained by one or more direction finders. (See Direction Finder)

**DF GUIDANCE/DF STEER—** Headings provided to aircraft by facilities equipped with direction finding equipment. These headings, if followed, will lead the aircraft to a predetermined point such as the DF station or an airport. DF guidance is given to aircraft in distress or to other aircraft which request the service. Practice DF guidance is provided when workload permits. (See Direction Finder, DF Fix) (Refer to AIM)

***DIRECT—*** Straight line flight between two navigational aids, fixes, points, or any combination thereof. When used by pilots in describing off-airway routes, points defining direct route segments become compulsory reporting points unless the aircraft is under radar contact.

**DIRECT ALTITUDE AND IDENTITY READOUT/DAIR—** The DAIR System is a modification to the AN/TPX-42 Interrogator System. The Navy has two adaptations of the DAIR System– Carrier Air Traffic Control Direct Altitude and Identification Readout System for Aircraft Carriers and Radar Air Traffic Control Facility Direct Altitude and Identity Readout System for land-based terminal operations. The DAIR detects, tracks, and predicts secondary radar aircraft targets. Targets are displayed by means of computer-generated symbols and alphanumeric characters depicting flight identification, altitude, ground speed, and flight plan data. The DAIR System is capable of interfacing with ARTCC's.

**DIRECTION FINDER/DF/UDF/VDF/UVDF—** A radio receiver equipped with a directional sensing antenna used to take bearings on a radio transmitter. Specialized radio direction finders are used in aircraft as air navigation aids. Others are ground-based, primarily to obtain a "fix" on a pilot requesting orientation assistance or to locate downed aircraft. A location "fix" is established by the intersection of two or more bearing lines plotted on a navigational chart using either two separately located Direction Finders to obtain a fix on an aircraft or by a pilot plotting the bearing indications of his DF on two separately located ground-based transmitters, both of which can be identified on his chart. UDF's receive signals in the ultra high frequency radio broadcast band; VDF's in the very high frequency band; and UVDF's in both bands. ATC provides DF service at those air traffic control towers and flight service stations listed in the Airport/Facility Directory and the DOD FLIP IFR En Route Supplement. (See DF Guidance, DF Fix)

**DISCRETE CODE/DISCRETE BEACON CODE—** As used in the Air Traffic Control Radar Beacon System (ATCRBS), any one of the 4096 selectable Mode 3/A aircraft transponder codes except those ending in zero zero; e.g., discrete codes: 0010, 1201, 2317, 7777; non-discrete codes: 0100, 1200, 7700. Non-discrete codes are normally reserved for radar facilities that are not equipped with discrete decoding capability and for other purposes such as emergencies (7700), VFR aircraft (1200), etc. (See Radar) (Refer to AIM)

**DISCRETE FREQUENCY—** A separate radio frequency for use in direct pilot-controller communications in air traffic control which reduces frequency congestion by controlling the number of aircraft operating on a particular frequency at one time. Discrete frequencies are normally designated for each control sector in en route/terminal ATC facilities. Discrete frequencies are listed in the Airport/Facility Directory and the DOD FLIP IFR En Route Supplement. (See Control Sector)

**DISPLACED THRESHOLD—** A threshold that is located at a point on the runway other than the designated beginning of the runway. (See Threshold) (Refer to AIM)

**DISTANCE MEASURING EQUIPMENT/DME—** Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid. (See TACAN, VORTAC, Microwave Landing System)

**DISTRESS—** A condition of being threatened by serious and/or imminent, danger, and of requiring immediate assistance.

**DIVERSE VECTOR AREA/DVA—** In a radar environment, that area in which a prescribed departure route is not required as the only suitable route to avoid obstacles. The area in which random radar vectors below the MVA/MIA, established in accordance with the TERPS criteria for diverse departures obstacles and terrain avoidance, may be issued to departing aircraft.

**DME FIX—** A geographical position determined by reference to a navigational aid which provides distance and azimuth information. It is defined by a specific distance in nautical miles and a radial, azimuth, or course (i.e., localizer) in degrees magnetic from that aid. (See Distance Measuring Equipment/DME, Fix, Microwave Landing System)

**DME SEPARATION—** Spacing of aircraft in terms of distances (nautical miles) determined by reference to distance measuring equipment (DME). (See Distance Measuring Equipment)

**DOD FLIP—** Department of Defense Flight Information Publications used for flight planning, en route, and terminal operations. FLIP is produced by the Defense Mapping Agency for world-wide use. United States Government Flight Information Publications (en route charts and instrument approach procedure charts) are incorporated in DOD FLIP for use in the National Airspace System (NAS).

**DOWNWIND LEG**— (See Traffic Pattern)

**DRAG CHUTE**— A parachute device installed on certain aircraft which is deployed on landing roll to assist in deceleration of the aircraft.

***EMERGENCY***— ADISTRESS or URGENCY condition.

**EMERGENCY LOCATOR TRANSMITTER/ELT**— A radio transmitter attached to the aircraft structure which operates from its own power source on 121.5 MHz and 243.0 MHz. It aids in locating downed aircraft by radiating a downward sweeping audio tone, 2-4 times per second. It is designed to function without human action after an accident. (Refer to FAR, Part 91, AIM)

**EMERGENCY SAFE ALTITUDE**— (See Minimum Safe Altitude)

**E-MSAW**— (See En Route Minimum Safe Altitude Warning)

**EN ROUTE AIR TRAFFIC CONTROL SERVICES**— Air traffic control service provided aircraft on IFR flight plans, generally by centers, when these aircraft are operating between departure and destination terminal areas. When equipment, capabilities, and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft. (See NAS Stage A, Air Route Traffic Control Center) (Refer to AIM)

**EN ROUTE AUTOMATED RADAR TRACKING SYSTEM/EARTS**— An automated radar and radar beacon tracking system. Its functional capabilities and design are essentially the same as the terminal ARTS IIIA system except for the EARTS capability of employing both short-range (ASR) and long-range (ARSR) radars, use of full digital radar displays, and fail-safe design. (See Automated Radar Terminal Systems/ARTS)

**EN ROUTE CHARTS**— (See Aeronautical Charts)

**EN ROUTE DESCENT**— Descent from the en route cruising altitude which takes place along the route of flight.

**EN ROUTE FLIGHT ADVISORY SERVICE/FLIGHT WATCH**— A service specifically designed to provide, upon pilot request, timely weather information pertinent to his type of flight, intended route of flight, and altitude. The FSS's providing this service are listed in the Airport/Facility Directory. (Refer to AIM)

**EN ROUTE MINIMUM SAFE ALTITUDE WARNING/E-MSAW**— A function of the NAS Stage A en route computer that aids the controller by alerting him when a tracked aircraft is below or predicted by the computer to go below a predetermined minimum IFR altitude (MIA).

*ICAO-ESTIMATED ELAPSED TIME/EET*-The estimated time required to proceed from one significant point to another (for use in international flight planning). (See Total Estimated Elapsed Time)

*ICAO-ESTIMATED OFF-BLOCK TIME*-The estimated time at which the aircraft will commence movement associated with departure (for use in international flight planning).

***EXECUTE MISSED APPROACH***— Instructions issued to a pilot making an instrument approach which means continue inbound to the missed approach point and execute the missed approach procedure as described on the Instrument Approach Procedure Chart or as previously assigned by ATC. The pilot may climb immediately to the altitude specified in the missed approach procedure upon making a missed approach. No turns should be initiated prior to reaching the missed approach point. When conducting an ASR or PAR approach, execute the assigned missed approach procedure immediately upon receiving instructions to "execute missed approach." (Refer to AIM)

***EXPECT (ALTITUDE) AT (TIME) or (FIX)***— Used under certain conditions to provide a pilot with an altitude to be used in the event of two-way communications failure. It also provides altitude information to assist the pilot in planning. (Refer to AIM)

**EXPECTED DEPARTURE CLEARANCE TIME/EDCT**— The runway release time assigned to an aircraft in a controlled departure time program and shown on the flight progress strip as an EDCT.

***EXPECT FURTHER CLEARANCE (TIME)/EFC***— The time a pilot can expect to receive clearance beyond a clearance limit.

***EXPECT FURTHER CLEARANCE VIA (AIRWAYS, ROUTES OR FIXES)***— Used to inform a pilot of the routing he can expect if any part of the route beyond a short range clearance limit differs from that filed.

***EXPEDITE***— Used by ATC when prompt compliance is required to avoid the development of an imminent situation.

**FAST FILE**— A system whereby a pilot files a flight plan via telephone that is tape recorded and then transcribed for transmission to the appropriate air traffic facility. Locations having a fast file capability are contained in the Airport/Facility Directory. (Refer to AIM)

**FEATHERED PROPELLER**— A propeller whose blades have been rotated so that the leading and trailing edges are nearly parallel with the aircraft flight path to stop or minimize drag and engine rotation. Normally used to indicate shutdown of a reciprocating or turboprop engine due to malfunction.

**FEEDER ROUTE**— A route depicted on instrument approach procedure charts to designate routes for aircraft to proceed from the en route structure to the initial approach fix (IAF). (See Instrument Approach Procedure)

**FERRY FLIGHT**— A flight for the purpose of:

1. Returning an aircraft to base,
2. Delivering an aircraft from one location to another.
3. Moving an aircraft to and from a maintenance base.

Ferry flights, under certain conditions, may be conducted under terms of a special flight permit.

**FILED—** Normally used in conjunction with flight plans, meaning a flight plan has been submitted to ATC.

**FILED EN ROUTE DELAY—** Any of the following preplanned delays at points/areas along the route of flight which require special flight plan filing and handling techniques.

1. Terminal Area Delay—A delay within a terminal area for touch-and-go, low approach, or other terminal area activity.
2. Special Use Airspace Delay—A delay within a Military Operating Area, Restricted Area, Warning Area, or ATC Assigned Airspace.
3. Aerial Refueling Delay—A delay within an Aerial Refueling Track or Anchor.

***FINAL—*** Commonly used to mean that an aircraft is on the final approach course or is aligned with a landing area. (See Final Approach Course, Final Approach—IFR, Traffic Pattern, Segments of an Instrument Approach Procedure)

**FINAL APPROACH COURSE—** A published MLS course, a straight line extension of a localizer, a final approach radial/bearing, or a runway centerline all without regard to distance. (See Final Approach—IFR, Traffic Pattern)

**FINAL APPROACH FIX/FAF—** The fix from which the final approach (IFR) to an airport is executed and which identifies the beginning of the final approach segment. It is designated on Government charts by the Maltese Cross symbol for nonprecision approaches and the lightning bolt symbol for precision approaches; or when ATC directs a lower-than-published Glideslope/path Intercept Altitude, it is the resultant actual point of the glideslope/path intercept. (See Final Approach Point, Glideslope/path Intercept Altitude, Segments of an Instrument Approach Procedure)

**FINAL APPROACH—IFR—** The flight path of an aircraft which is inbound to an airport on a final instrument approach course, beginning at the final approach fix or point and extending to the airport or the point where a circle-to-land maneuver or a missed approach is executed. (See Segments of an Instrument Approach Procedure, Final Approach Fix, Final Approach Course, Final Approach Point)

*ICAO—FINAL APPROACH—* That part of an instrument approach procedure from the time the aircraft has:

1. Completed the last procedure turn or base turn, where one is specified, or
2. Crossed a specified fix, or
3. Intercepted the last track specified for the procedures until it has crossed a point in the vicinity of an aerodrome from which:
    a. A landing can be made, or
    b. A missed approach procedure is initiated.

**FINAL APPROACH POINT/FAP—** The point, applicable only to a nonprecision approach with no depicted FAF (such as an on-airport VOR), where the aircraft is established inbound on the final approach course from the procedure turn and where the final approach descent may be commenced. The FAP serves as the FAF and identifies the beginning of the final approach segment. (See Final Approach Fix, Segments of an Instrument Approach Procedure)

**FINAL APPROACH SEGMENT—** (See Segments of an Instrument Approach Procedure)

**FINAL APPROACH—VFR—** (See Traffic Pattern)

**FINAL CONTROLLER—** The controller providing information and final approach guidance during PAR and ASR approaches utilizing radar equipment. (See Radar Approach)

**FIX—** A geographical position determined by visual reference to the surface, by reference to one or more radio NAVAIDs, by celestial plotting, or by another navigational device.

**FLAG/FLAG ALARM—** A warning device incorporated in certain airborne navigation and flight instruments indicating that:

1. Instruments are inoperative or otherwise not operating satisfactorily, or
2. Signal strength or quality of the received signal falls below acceptable values.

**FLAMEOUT—** Unintended loss of combustion in turbine engines resulting in the loss of engine power.

**FLIGHT CHECK—** A call-sign prefix used by FAA aircraft engaged in flight inspection/certification of navigational aids and flight procedures. The word "recorded" may be added as a suffix; e.g., "Flight Check 320 recorded" to indicate that an automated flight inspection is in progress in terminal areas. (See Flight Inspection/Flight Check) (Refer to AIM).

**FLIGHT INFORMATION REGION/FIR—** An airspace of defined dimensions within which Flight Information Service and Alerting Service are provided.

1. Flight Information Service—A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.
2. Alerting Service—A service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid and to assist such organizations as required.

**FLIGHT INSPECTION/FLIGHT CHECK—** Inflight investigation and evaluation of a navigational aid to determine whether it meets established tolerances. (See Navigational Aid)

***FLIGHT LEVEL—*** A level of constant atmospheric pressure related to a reference datum of 29.92 inches of mercury. Each is stated in three digits that represent hundreds of feet. For example, flight level 250 represents a barometric altimeter indication of 25,000 feet; flight level 255, an indication of 25,500 feet.

*ICAO—FLIGHT LEVELS—*Surfaces of constant atmospheric pressure which are related to a specific pressure datum, 1013.2 mb (29.92 inches) and are separated by specific pressure intervals.

**FLIGHT LINE—** A term used to describe the precise movement of a civil photogrammetric aircraft along a predetermined course(s) at a predetermined altitude during the actual photographic run.

**FLIGHT PATH—** A line, course, or track along which an aircraft is flying or intended to be flown. (See Track, Course)

**FLIGHT PLAN—** Specified information relating to the intended flight of an aircraft that is filed orally or in writing with an FSS or an ATC facility. (See Fast File, Filed) (Refer to AIM)

**FLIGHT RECORDER—** A general term applied to any instrument or device that records information about the performance of an aircraft in flight or about conditions encountered in flight. Flight recorders may make records of airspeed, outside air temperature, vertical acceleration, engine RPM, manifold pressure, and other pertinent variables for a given flight.

*ICAO—FLIGHT RECORDER—*Any type of recorder installed in the aircraft for the purpose of complementing accident/incident investigation.

**FLIGHT SERVICE STATION/FSS—** Air traffic facilities which provide pilot briefing, en route communications and VFR search and rescue services, assist lost aircraft and aircraft in emergency situations, relay ATC clearances, originate Notices to Airmen, broadcast aviation weather and NAS information, receive and process IFR flight plans, and monitor NAVAID's. In addition, at selected locations FSS's provide Enroute Flight Advisory Service (Flight Watch), take weather observations, issue airport advisories, and advise Customs and Immigration of transborder flights. (Refer to AIM)

**FLIGHT STANDARDS DISTRICT OFFICE/FSDO—** An FAA field office serving an assigned geographical area and staffed with Flight Standards personnel who serve the aviation industry and the general public on matters relating to the certification and operation of air carrier and general aviation aircraft. Activities include general surveillance of operational safety, certification of airmen and aircraft, accident prevention, investigation, enforcement, etc.

**FLIGHT TEST—** A flight for the purpose of:

1. Investigating the operation/flight characteristics of an aircraft or aircraft component.
2. Evaluating an applicant for a pilot certificate or rating.

**FLIGHT VISIBILITY—** (See Visibility)

**FLIGHT WATCH—** A shortened term for use in air-ground contacts on frequency 122.0 MHz to identify the flight service station providing En Route Flight Advisory Service; e.g., "Oakland Flight Watch." (See En Route Flight Advisory Service)

**FLIP—** (See DOD FLIP)

**FLOW CONTROL—** Measures designed to adjust the flow of traffic into a given airspace, along a given route, or bound for a given aerodrome (airport) so as to ensure the most effective utilization of the airspace. (See Quota Flow Control) (Refer to Airport/Facility Directory

**FLY HEADING (DEGREES)—** Informs the pilot of the heading he should fly. The pilot may have to turn to, or continue on, a specific compass direction in order to comply with the instructions. The pilot is expected to turn in the shorter direction to the heading unless otherwise instructed by ATC.

**FORMATION FLIGHT—** More than one aircraft which, by prior arrangement between the pilots, operate as a single aircraft with regard to navigation and position reporting. Separation between aircraft within the formation is the responsibility of the flight leader and the pilots of the other aircraft in the flight. This includes transition periods when aircraft within the formation are maneuvering to attain separation from each other to effect individual control and during join-up and breakaway.

1. A standard formation is one in which a proximity of no more than 1 mile laterally or longitudinally and within 100 feet vertically from the flight leader is maintained by each wingman.
2. Nonstandard formations are those operating under any of the following conditions:
   a. When the flight leader has requested and ATC has approved other than standard formation dimensions.
   b. When operating within an authorized altitude reservation (ALTRV) or under the provisions of a letter of agreement.
   c. When the operations are conducted in airspace specifically designed for a special activity. (See Altitude Reservation) (Refer to FAR Part 91)

**FSS—** (See Flight Service Station)

**FUEL DUMPING—** Airborne release of usable fuel. This does not include the dropping of fuel tanks. (See Jettisoning of External Stores)

**FUEL SIPHONING/FUEL VENTING—** Unintentional release of fuel caused by overflow, puncture, loose cap, etc.

**GATE HOLD PROCEDURES—** Procedures at selected airports to hold aircraft at the gate or other ground location whenever departure delays exceed or are anticipated to exceed 5 minutes. The sequence for departure will be maintained in accordance with initial call-up unless modified by Flow Control restrictions. Pilots should monitor the ground control/clearance delivery frequency for engine startup advisories or new proposed start time if the delay changes. (See Flow Control)

**GENERAL AVIATION—** That portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of public convenience and necessity from the Civil Aeronautics Board and large aircraft commercial operators.

*ICAO—GENERAL AVIATION—*All civil aviation operations other than scheduled air services and non-scheduled air transport operations for remuneration or hire.

**GENERAL AVIATION DISTRICT OFFICE/GADO—** An FAA field office serving a designated geographical area and staffed with Flight Standards personnel who have the responsibility for serving the aviation industry and the general public on all matters relating to the certification and operation of general aviation aircraft.

**GLIDESLOPE/GLIDEPATH—** Provides vertical guidance for aircraft during approach and landing. The glideslope/glidepath is based on the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS/MLS, or
2. Visual ground aids, such as VASI, which provide vertical guidance for a VFR approach or for the visual portion of an instrument approach and landing.
3. PAR. Used by ATC to inform an aircraft making a PAR approach of its vertical position (elevation) relative to the descent profile.

*ICAO—GLIDEPATH—* A descent profile determined for vertical guidance during a final approach.

**GLIDESLOPE/GLIDEPATH INTERCEPT ALTITUDE—** The minimum altitude to intercept the glideslope/path on a precision approach. The intersection of the published intercept altitude with the glideslope/path, designated on Government charts by the lightning bolt symbol, is the precision FAF; however, when ATC directs a lower altitude, the resultant lower intercept position is then the FAF. (See Final Approach Fix, Segments of an Instrument Approach Procedure)

***GO AHEAD—*** Proceed with your message. Not to be used for any other purpose.

***GO AROUND—*** Instructions for a pilot to abandon his approach to landing. Additional instructions may follow. Unless otherwise advised by ATC, a VFR aircraft or an aircraft conducting visual approach should overfly the runway while climbing to traffic pattern altitude and enter the traffic pattern via the crosswind leg. A pilot on an IFR flight plan making an instrument approach should execute the published missed approach procedure or proceed as instructed by ATC; e.g., "Go around" (additional instructions if required). (See Low Approach, Missed Approach)

**GROUND CLUTTER—** A pattern produced on the radar scope by ground returns which may degrade other radar returns in the affected area. The effect of ground clutter is minimized by the use of moving target indicator (MTI) circuits in the radar equipment resulting in a radar presentation which displays only targets which are in motion. (See Clutter)

**GROUND CONTROLLED APPROACH/GCA—** A radar approach system operated from the ground by air traffic control personnel transmitting instructions to the pilot by radio. The approach may be conducted with surveillance radar (ASR) only or with both surveillance and precision approach radar (PAR). Usage of the term "GCA" by pilots is discouraged except when referring to a GCA facility. Pilots should specifically request a "PAR" approach when a precision radar approach is desired or request an "ASR" or "surveillance" approach when a nonprecision radar approach is desired. (See Radar Approach)

**GROUND DELAY—** The amount of delay attributed to ATC, encountered prior to departure, usually associated with a CDT program.

**GROUND SPEED—** The speed of an aircraft relative to the surface of the earth.

**GROUND VISIBILITY—** (See Visibility)

**HANDOFF—** An action taken to transfer the radar identification of an aircraft from one controller to another if the aircraft will enter the receiving controller's airspace and radio communications with the aircraft will be transferred.

***HAVE NUMBERS—*** Used by pilots to inform ATC that they have received runway, wind, and altimeter information only.

**HAZARDOUS INFLIGHT WEATHER ADVISORY SERVICE/HIWAS—** A program for broadcasting hazardous weather information (SIGMET's, Convective SIGMET's, CWA's, AIRMET's, and Urgent PIREP's) on a continuous basis over selected VOR's. (Refer to AIM)

***HEAVY (AIRCRAFT)—*** (See Aircraft Classes)

**HEIGHT ABOVE AIRPORT/HAA—** The height of the Minimum Descent Altitude above the published airport elevation. This is published in conjunction with circling minimums. (See Minimum Descent Altitude)

**HEIGHT ABOVE LANDING/HAL—** The height above a designated helicopter landing area used for helicopter instrument approach procedures. (Refer to FAR Part 97)

**HEIGHT ABOVE TOUCHDOWN/HAT—** The height of the Decision Height or Minimum Descent Altitude above the highest runway elevation in the touchdown zone (first 3,000 feet of the runway). HAT is published on instrument approach charts in conjunction with all straight-in minimums. (See Decision Height, Minimum Descent Altitude)

**HELICOPTER/COPTER—** Rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors.

*ICAO—HELICOPTER—* A heavier-than-air aircraft supported in flight by the reactions of the air on one or more power-driven rotors on substantially vertical axes.

**HELIPAD—** A small, designated area, usually with a prepared surface, on a heliport, airport, landing/takeoff area, apron/ramp, or movement area used for takeoff, landing, or parking of helicopters.

**HELIPORT—** An area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters and includes its buildings and facilities if any.

**HERTZ/Hz—** The standard radio equivalent of frequency in cycles per second of an electromagnetic wave. Kilohertz (kHz) is a frequency of one thousand cycles per second. Megahertz (MHz) is a frequency of one million cycles per second.

**HIGH FREQUENCY/HF—** The frequency band between 3 and 30 MHz. (See High Frequency Communications)

**HIGH FREQUENCY COMMUNICATIONS/HF COMMUNICATIONS—** High radio frequencies (HF) between 3 and 30 MHz used for air-to-ground voice communication in overseas operations.

**HIGH SPEED TAXIWAY/EXIT/TURNOFF—** A long radius taxiway designed and provided with lighting or marking to define the path of aircraft, traveling at high speed (up to 60 knots), from the runway center to a point on the center of a taxiway. Also referred to as long radius exit or turn-off taxiway. The high speed taxiway is designed to expedite aircraft turning off the runway after landing, thus reducing runway occupancy time.

**HOLD/HOLDING PROCEDURE—** A predetermined maneuver which keeps aircraft within a specified airspace while awaiting further clearance from air traffic control. Also used during ground operations to keep aircraft within a specified area or at a specified point while awaiting further clearance from air traffic control. (See Holding Fix) (Refer to AIM)

**HOLDING FIX—** A specified fix identifiable to a pilot by NAVAID's or visual reference to the ground used as a reference point in establishing and maintaining the position of an aircraft while holding. (See Fix, Hold, Visual Holding) (Refer to AIM)

**HOLD FOR RELEASE—** Used by ATC to delay an aircraft for traffic management reasons; i.e., weather, traffic volume, etc. Hold for release instructions (including departure delay information) are used to inform a pilot or a controller (either directly or through an authorized relay) that a departure clearance is not valid until a release time or additional instructions have been received.

*ICAO—HOLDING POINT—* A specified location, identified by visual or other means, in the vicinity of which the position of an aircraft in flight is maintained with air traffic control clearances.

***HOMING—*** Flight toward a NAVAID, without correcting for wind, by adjusting the aircraft heading to maintain a relative bearing of zero degrees. (See Bearing)

*ICAO—HOMING—*The procedure of using the direction-finding equipment of one radio station with the emission of another radio station, where at least one of the stations is mobile, and whereby the mobile station proceeds continuously towards the other station.

**HOVER CHECK—** Used to describe when a helicopter/VTOL aircraft requires a stabilized hover to conduct a performance/power check prior to hover taxi, air taxi, or takeoff. Altitude of the hover will vary based on the purpose of the check.

**HOVER TAXI—** Used to describe a helicopter/VTOL aircraft movement conducted above the surface and in ground effect at airspeeds less than approximately 20 knots. The actual height may vary, and some helicopters may require hover taxi above 25 feet AGL to reduce ground effect turbulence or provide clearance for cargo slingloads. (See Air Taxi, Hover Check) (Refer to AIM)

***HOW DO YOU HEAR ME?—*** A question relating to the quality of the transmission or to determine how well the transmission is being received.

***IDENT—*** A request for a pilot to activate the aircraft transponder identification feature. This will help the controller to confirm an aircraft identity or to identify an aircraft. (Refer to AIM)

**IDENT FEATURE—** The special feature in the Air Traffic Control Radar Beacon System (ATCRBS) equipment. It is used to immediately distinguish one displayed beacon target from other beacon targets. (See Ident)

***IF FEASIBLE, REDUCE SPEED TO (SPEED)—*** (See Speed Adjustment)

***IF NO TRANSMISSION RECEIVED FOR (TIME)—*** Used by ATC in radar approaches to prefix procedures which should be followed by the pilot in event of lost communications. (See Lost Communications)

**IFR AIRCRAFT/IFR FLIGHT—** An aircraft conducting flight in accordance with instrument flight rules.

**IFR CONDITIONS—** Weather conditions below the minimum for flight under visual flight rules. (See Instrument Meteorological Conditions)

**IFR DEPARTURE PROCEDURE—** (See IFR Takeoff Minimums and Departure Procedures) (Refer to AIM)

**IFR MILITARY TRAINING ROUTES (IR)—** Routes used by the Department of Defense and associated Reserve and Air Guard units for the purpose of conducting low-altitude navigation and tactical training in both IFR and VFR weather conditions below 10,000 feet MSL at airspeeds in excess of 250 knots IAS.

**IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES—** FAR, Part 91, prescribes standard takeoff rules for certain civil users. At some airports, obstructions or other factors require the establishment of nonstandard takeoff minimums, departure procedures, or both to assist pilots in avoiding obstacles during climb to the minimum en route altitude. Those airports are listed in NOS/DOD Instrument Approach Charts (IAP's) under a section entitled "IFR Takeoff Minimums and Departure Procedures." The NOS/DOD IAP chart legend illustrates the symbol used to alert the pilot to nonstandard takeoff minimums and departure procedures. When departing IFR from such airports or from any airports where there are no departure procedures, SID's, or ATC facilities available, pilots should advise ATC of any departure limitations. Controllers may query a pilot to determine acceptable departure directions, turns, or headings after takeoff. Pilots should be familiar with the departure procedures and must assure that their aircraft can meet or exceed any specified climb gradients.

**ILS CATEGORIES—**

1. ILS Category I—An ILS approach procedure which provides for approach to a height above touchdown of not less than 200 feet and with runway visual range of not less than 1,800 feet.
2. ILS Category II—An ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200 feet.
3. ILS Category III.
   a. IIIA—An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 700 feet.
   b. IIIB—An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 150 feet.
   c. IIIC—An ILS approach procedure which provides for approach without a decision height minimum and without runway visual range minimum.

***IMMEDIATELY—*** Used by ATC when such action compliance is required to avoid an imminent situation.

***INCREASE SPEED TO (SPEED)—*** (See Speed Adjustment)

**INFORMATION REQUEST/INREQ—** A request originated by an FSS for information concerning an overdue VFR aircraft.

**INITIAL APPROACH FIX/IAF—** The fixes depicted on instrument approach procedure charts that identify the beginning of the initial approach segment(s). (See Fix, Segments of an Instrument Approach Procedure)

**INITIAL APPROACH SEGMENT—** (See Segments of an Instrument Approach Procedure)

**INNER MARKER/IM/INNER MARKER BEACON—** A marker beacon used with an ILS (CAT II) precision approach located between the middle marker and the end of the ILS runway, transmitting a radiation pattern keyed at six dots per second and indicating to the pilot, both aurally and visually, that he is at the designated decision height (DH), normally 100 feet above the touchdown zone elevation, on the ILS CAT II approach. It also marks progress during a CAT III approach. (See Instrument Landing System) (Refer to AIM)

**INSTRUMENT APPROACH PROCEDURE/IAP/INSTRUMENT APPROACH—** A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority. (See Segments of an Instrument Approach Procedure) (Refer to FAR, Part 91, AIM)

1. U. S. civil standard instrument approach procedures are approved by the FAA as prescribed under FAR, Part 97 and are available for public use.
2. U.S. military standard instrument approach procedures are approved and published by the Department of Defense.
3. Special instrument approach procedures are approved by the FAA for individual operators but are not published in FAR, Part 97 for public use.

*ICAO—INSTRUMENT APPROACH PROCEDURE—* A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

**INSTRUMENT FLIGHT RULES/IFR—** Rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan. (See Visual Flight Rules, Instrument Meteorological Conditions, Visual Meteorological Conditions) (Refer to AIM)

*ICAO—INSTRUMENT FLIGHT RULES—* A set of rules governing the conduct of flight under instrument meteorological conditions.

**INSTRUMENT LANDING SYSTEM/ILS—** A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer. (See Localizer)
2. Glideslope. (See Glideslope)
3. Outer Marker. (See Outer Marker)
4. Middle Marker. (See Middle Marker)
5. Approach Lights. (See Airport Lighting)

(Refer to FAR Part 91, AIM)

**INSTRUMENT METEOROLOGICAL CONDITIONS/IMC—** Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling less than the minima specified for visual meteorological conditions. (See Visual Meteorological Conditions, Instrument Flight Rules, Visual Flight Rules)

**INSTRUMENT RUNWAY—** A runway equipped with electronic and visual navigation aids for which a precision or nonprecision approach procedure having straight-in landing minimums has been approved.

*ICAO—INSTRUMENT RUNWAY—* A runway intended for the operation of aircraft using nonvisual aids and comprising:

1. Instrument Approach Runway—An instrument runway served by a nonvisual aid providing at least directional guidance adequate for a straight-in approach.
2. Precision Approach Runway, Category I—An instrument runway served by ILS or GCA approach aids and visual aids intended for operations down to 60 metres (200 feet) decision height and down to an RVR of the order of 800 metres (2,600 feet.)
3. Precision Approach Runway, Category II—An instrument runway served by ILS and visual aids intended for operations down to 30 metres (100

feet) decision height and down to an RVR of the order of 400 metres (1,200 feet.)

4. Precision Approach Runway, Category III—An instrument runway served by ILS (no decision height being applicable) and:
    a. By visual aids intended for operations down to an RVR of the order of 200 metres (700 feet);
    b. By visual aids intended for operations down to an RVR of the order of 50 metres (150 feet);
    c. Intended for operations without reliance on external visual reference.

**INTERMEDIATE APPROACH SEGMENT—** (See Segments of an Instrument Approach Procedure)

**INTERMEDIATE FIX/IF—** The fix that identifies the beginning of the intermediate approach segment of an instrument approach procedure. The fix is not normally identified on the instrument approach chart as an intermediate fix (IF). (See Segments of an Instrument Approach Procedure)

**INTERNATIONAL AIRPORT—** Relating to international flight, it means:

1. An airport of entry which has been designated by the Secretary of Treasury or Commissioner of Customs as an international airport for customs service.
2. A landing rights airport at which specific permission to land must be obtained from customs authorities in advance of contemplated use.
3. Airports designated under the Convention on International Civil Aviation as an airport for use by international commercial air transport and/or international general aviation. (Refer to Airport/Facility Directory and IFIM).

*ICAO—INTERNATIONAL AIRPORT*—Any airport designated by the Contracting State in whose territory it is situated as an airport of entry and departure for international air traffic, where the formalities incident to customs, immigration, public health, animal and plant quarantine, and similar procedures are carried out.

**INTERNATIONAL CIVIL AVIATION ORGANIZATION/ICAO—** A specialized agency of the United Nations whose objective is to develop the principles and techniques of international air navigation and to foster planning and development of international civil air transport.

**INTERNATIONAL FLIGHT INFORMATION MANUAL/IFIM—** A publication designed primarily as a pilot's preflight planning guide for flights into foreign airspace and for flights returning to the U.S. from foreign locations.

**INTERROGATOR—** The ground-based surveillance radar beacon transmitter-receiver, which normally scans in synchronism with a primary radar, transmitting discrete radio signals which repetitiously request all transponders on the mode being used to reply. The replies received are mixed with the primary radar returns and displayed on the same plan position indicator (radar scope). Also, applied to the airborne element of the TACAN/DME system. (See Transponder) (Refer to AIM)

**INTERSECTING RUNWAYS—** Two or more runways which cross or meet within their lengths. (See Intersection)

**INTERSECTION—**

1. A point defined by any combination of courses, radials, or bearings of two or more navigational aids.
2. Used to describe the point where two runways, a runway and a taxiway, or two taxiways cross or meet.

**INTERSECTION DEPARTURE/INTERSECTION TAKEOFF—** A takeoff or proposed takeoff on a runway from an intersection. (See Intersection)

***I SAY AGAIN*—** The message will be repeated.

**JAMMING—** Electronic or mechanical interference which may disrupt the display of aircraft on radar or the transmission/reception of radio communications/navigation.

**JET BLAST—** Jet engine exhaust (thrust stream turbulence). (See Wake Turbulence)

**JET ROUTE—** A route designed to serve aircraft operations from 18,000 feet MSL up to and including flight level 450. The routes are referred to as "J" routes with numbering to identify the designated route; e.g., J105. (See Route) (Refer to FAR Part 71)

**JET STREAM—** A migrating stream of high-speed winds present at high altitudes.

**JETTISONING OF EXTERNAL STORES—** Airborne release of external stores; e.g., tiptanks, ordnance. (See Fuel Dumping) (Refer to FAR Part 91)

**JOINT USE RESTRICTED AREA—** (See Restricted Area)

**KNOWN TRAFFIC—** With respect to ATC clearances, means aircraft whose altitude, position, and intentions are known to ATC.

**LANDING/TAKEOFF AREA—** Any locality either on land, water, or structures, including airports/heliports and intermediate landing fields, which is used, or intended to be used, for the landing and takeoff of aircraft whether or not facilities are provided for the shelter, servicing, or for receiving or discharging passengers or cargo.

*ICAO—LANDING AREA*—That part of the movement area intended for the landing and takeoff of aircraft.

**LANDING DIRECTION INDICATOR—** A device which visually indicates the direction in which landings and takeoffs should be made. (See Tetrahedron) (Refer to AIM)

**LANDING MINIMUMS/IFR LANDING MINIMUMS—** The minimum visibility prescribed for landing a civil aircraft while using an instrument approach procedure. The minimum applies with other limitations set forth in FAR Part 91 with respect to the Minimum Descent Altitude (MDA) or Decision Height (DH) prescribed in the instrument approach procedures as follows:

1. Straight-in landing minimums—A statement of MDA and visibility, or DH and visibility, required for a straight-in landing on a specified runway, or
2. Circling minimums— A statement of MDA and visibility required for the circle-to-land maneuver.

Descent below the established MDA or DH is not authorized during an approach unless the aircraft is in a position from which a normal approach to the runway of intended landing can be made and adequate visual reference to required visual cues is maintained. (See Straight-in Landing, Circle-to-Land Maneuver, Decision Height, Minimum Descent Altitude, Visibility, Instrument Approach Procedure) (Refer to FAR Part 91)

**LANDING ROLL—** The distance from the point of touchdown to the point where the aircraft can be brought to a stop or exit the runway.

**LANDING SEQUENCE—** The order in which aircraft are positioned for landing. (See Approach Sequence)

**LAST ASSIGNED ALTITUDE—** The last altitude/flight level assigned by ATC and acknowledged by the pilot. (See Maintain) (Refer to FAR Part 91)

**LATERAL SEPARATION—** The lateral spacing of aircraft at the same altitude by requiring operation on different routes or in different geographical locations. (See Separation)

**LIGHTED AIRPORT—** An airport where runway and obstruction lighting is available. (See Airport Lighting) (Refer to AIM)

**LIGHT GUN—** A handheld directional light signaling device which emits a brilliant narrow beam of white, green, or red light as selected by the tower controller. The color and type of light transmitted can be used to approve or disapprove anticipated pilot actions where radio communication is not available. The light gun is used for controlling traffic operating in the vicinity of the airport and on the airport movement area. (Refer to AIM)

**LOCALIZER—** The component of an ILS which provides course guidance to the runway. (See Instrument Landing System) (Refer to AIM)

*ICAO—LOCALIZER COURSE (ILS)—* The locus of points, in any given horizontal plane, at which the DDM (difference in depth of modulation) is zero.

**LOCALIZER TYPE DIRECTIONAL AID/LDA—** A NAVAID used for nonprecision instrument approaches with utility and accuracy comparable to a localizer but which is not a part of a complete ILS and is not aligned with the runway. (Refer to AIM)

**LOCALIZER USABLE DISTANCE—** The maximum distance from the localizer transmitter at a specified altitude, as verified by flight inspection, at which reliable course information is continuously received. (Refer to AIM)

**LOCAL TRAFFIC—** Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport. (See Traffic Pattern)

**LONGITUDINAL SEPARATION—** The longitudinal spacing of aircraft at the same altitude by a minimum distance expressed in units of time or miles. (See Separation) (Refer to AIM)

**LORAN/LONG RANGE NAVIGATION—** An electronic navigational system by which hyperbolic lines of position are determined by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran A operates in the 1750—1950 kHz frequency band. Loran C and D operate in the 100—110 kHz frequency band. (Refer to AIM)

**LOST COMMUNICATIONS/TWO-WAY RADIO COMMUNICATIONS FAILURE—** Loss of the ability to communicate by radio. Aircraft are sometimes referred to as NORDO (No Radio). Standard pilot procedures are specified in FAR Part 91. Radar controllers issue procedures for pilots to follow in the event of lost communications during a radar approach when weather reports indicate that an aircraft will likely encounter IFR weather conditions during the approach. (Refer to FAR Part 91, AIM)

**LOW ALTITUDE AIRWAY STRUCTURE/FEDERAL AIRWAYS—** The network of airways serving aircraft operations up to but not including 18,000 feet MSL. (See Airway) (Refer to AIM)

***LOW ALTITUDE ALERT, CHECK YOUR ALTITUDE IMMEDIATELY—*** (See Safety Alert)

**LOW ALTITUDE ALERT SYSTEM/LAAS—** An automated function of the TPX-42 that alerts the controller when a Mode C transponder-equipped aircraft on an IFR flight plan is below a predetermined minimum safe altitude. If requested by the pilot, LAAS monitoring is also available to VFR Mode C transponder-equipped aircraft.

**LOW APPROACH—** An approach over an airport or runway following an instrument approach or a VFR approach including the go-around maneuver where the pilot intentionally does not make contact with the runway. (Refer to AIM)

**LOW FREQUENCY/LF—** The frequency band between 30 and 300 kHz. (Refer to AIM)

**MACH NUMBER—** The ratio of true airspeed to the speed of sound; e.g., MACH .82, MACH 1.6. (See Airspeed)

***MAINTAIN—***

1. Concerning altitude/flight level, the term means to remain at the altitude/flight level specified. The phrase "climb and" or "descend and" normally precedes "maintain" and the altitude assignment; e.g., "descend and maintain 5,000."
2. Concerning other ATC instructions, the term is used in its literal sense; e.g., maintain VFR.

***MAKE SHORT APPROACH***— Used by ATC to inform a pilot to alter his traffic pattern so as to make a short final approach. (See Traffic Pattern)

**MANDATORY ALTITUDE**— An altitude depicted on an instrument Approach Procedure Chart requiring the aircraft to maintain altitude at the depicted value.

**MARKER BEACON**— An electronic navigation facility transmitting a 75 MHz vertical fan or boneshaped radiation pattern. Marker beacons are identified by their modulation frequency and keying code, and when received by compatible airborne equipment, indicate to the pilot, both aurally and visually, that he is passing over the facility. (See Outer Marker, Middle Marker, Inner Marker) (Refer to AIM)

**MAXIMUM AUTHORIZED ALTITUDE/MAA**— A published altitude representing the maximum usable altitude or flight level for an airspace structure or route segment. It is the highest altitude on a Federal airway, jet route, area navigation low or high route, or other direct route for which an MEA is designated in FAR Part 95 at which adequate reception of navigation aid signals is assured.

***MAYDAY***— The international radiotelephony distress signal. When repeated three times, it indicates imminent and grave danger and that immediate assistance is requested. (See Pan-Pan) (Refer to AIM)

**METEOROLOGICAL IMPACT STATEMENT/MIS**— An unscheduled planning forecast describing conditions expected to begin within 4 to 12 hours which may impact the flow of air traffic in a specific center's (ARTCC) area.

**METERING**— A method of time-regulating arrival traffic flow into a terminal area so as not to exceed a predetermined terminal acceptance rate.

**METERING FIX**— A fix along an established route from over which aircraft will be metered prior to entering terminal airspace. Normally, this fix should be established at a distance from the airport which will facilitate a profile descent 10,000 feet above airport elevation (AAE) or above.

MIA— (See Minimum IFR Altitudes)

**MICROWAVE LANDING SYSTEM/MLS**— A precision instrument approach system operating in the microwave spectrum which normally consists of the following components:

1. Azimuth Station.
2. Elevation Station.
3. Precision Distance Measuring Equipment. (See MLS Categories)

**MIDDLE COMPASS LOCATOR**— (See Compass Locator)

**MIDDLE MARKER/MM**— A marker beacon that defines a point along the glide slope of an ILS normally located at or near the point of decision height (ILS Category I). It is keyed to transmit alternate dots and dashes, with the alternate dots and dashes keyed at the rate of 95 dot/dash combinations per minute on a 1300 Hz tone, which is received aurally and visually by compatible airborne equipment. (See Marker Beacon, Instrument Landing System) (Refer to AIM)

**MID RVR**— (See Visibility)

**MILITARY AUTHORITY ASSUMES RESPONSIBILITY FOR SEPARATION OF AIRCRAFT/MARSA**— A condition whereby the military services involved assume responsibility for separation between participating military aircraft in the ATC system. It is used only for required IFR operations which are specified in letters of agreement or other appropriate FAA or military documents.

**MILITARY OPERATIONS AREA/MOA**— (See Special Use Airspace)

**MILITARY TRAINING ROUTES/MTR**— Airspace of defined vertical and lateral dimensions established for the conduct of military flight training at airspeeds in excess of 250 knots IAS. (See IFR (IR) and VFR (VR) Military Training Routes)

**MINIMUM CROSSING ALTITUDE/MCA**— The lowest altitude at certain fixes at which an aircraft must cross when proceeding in the direction of a higher minimum en route IFR altitude (MEA). (See Minimum En Route IFR Altitude)

**MINIMUM DESCENT ALTITUDE/MDA**— The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided. (See Nonprecision Approach Procedure)

**MINIMUM EN ROUTE IFR ALTITUDE/MEA**— The lowest published altitude between radio fixes which assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes. The MEA prescribed for a Federal airway or segment thereof, area navigation low or high route, or other direct route applies to the entire width of the airway, segment, or route between the radio fixes defining the airway, segment, or route. (Refer to FAR Parts 91 and 95; AIM)

**MINIMUM FUEL**— Indicates that an aircraft's fuel supply has reached a state where, upon reaching the destination, it can accept little or no delay. This is not an emergency situation but merely indicates an emergency situation is possible should any undue delay occur. (Refer to AIM)

**MINIMUM HOLDING ALTITUDE/MHA**— The lowest altitude prescribed for a holding pattern which assures navigational signal coverage, communications, and meets obstacle clearance requirements.

**MINIMUM IFR ALTITUDES/MIA**— Minimum altitudes for IFR operations as prescribed in FAR Part 91. These altitudes are published on aeronautical charts and prescribed in FAR Part 95 for airways and routes, and in FAR Part 97 for standard instrument approach procedures. If no applicable minimum altitude is prescribed in FAR Parts 95 or 97, the following minimum IFR altitude applies:

1. In designated mountainous areas, 2,000 feet above the highest obstacle within a horizontal

distance of 5 statute miles from the course to be flown; or

2. Other than mountainous areas, 1,000 feet above the highest obstacle within a horizontal distance of 5 statute miles from the course to be flown; or
3. As otherwise authorized by the Administrator or assigned by ATC. (See Minimum En Route IFR Altitude, Minimum Obstruction Clearance Altitude, Minimum Crossing Altitude, Minimum Safe Altitude, Minimum Vectoring Altitude) (Refer to FAR Part 91)

**MINIMUM OBSTRUCTION CLEARANCE ALTITUDE/MOCA—** The lowest published altitude in effect between radio fixes on VOR airways, off-airway routes, or route segments which meets obstacle clearance requirements for the entire route segment and which assures acceptable navigational signal coverage only within 25 statute (22 nautical) miles of a VOR. (Refer to FAR Part 91 and 95)

**MINIMUM RECEPTION ALTITUDE/MRA—** The lowest altitude at which an intersection can be determined. (Refer to FAR Part 95)

**MINIMUM SAFE ALTITUDE/MSA—**

1. The minimum altitude specified in FAR Part 91 for various aircraft operations.
2. Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance for emergency use within a specified distance from the navigation facility upon which a procedure is predicated. These altitudes will be identified as Minimum Sector Altitudes or Emergency Safe Altitudes and are established as follows:
    a. Minimum Sector Altitudes—Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance within a 25-mile radius of the navigation facility upon which the procedure is predicated. Sectors depicted on approach charts must be at least 90 degrees in scope. These altitudes are for emergency use only and do not necessarily assure acceptable navigational signal coverage.

*ICAO—MINIMUM SECTOR ALTITUDE—* The lowest altitude which may be used under emergency conditions which will provide a minimum clearance of 300 meters (1,000 feet) above all obstacles located in an area contained within a sector of a circle of 25 nautical mile radius centered on a radio aid to navigation.

    b. Emergency Safe Altitudes—Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance in nonmountainous areas and 2,000 feet of obstacle clearance in designated mountainous areas within a 100-mile radius of the navigation facility upon which the procedure is predicated and normally used only in military procedures. These altitudes are identified on published procedures as "Emergency Safe Altitudes."

**MINIMUM SAFE ALTITUDE WARNING (MSAW)—** A function of the ARTS III computer that aids the controller by alerting him when a tracked Mode C-equipped aircraft is below or is predicted by the computer to go below a predetermined minimum safe altitude. (Refer to AIM)

**MINIMUMS/MINIMA—** Weather condition requirements established for a particular operation or type of operation; e.g., IFR takeoff or landing, alternate airport for IFR flight plans, VFR flight, etc. (See Landing Minimums, IFR Takeoff Minimums, VFR Conditions, IFR Conditions) (Refer to FAR Part 91, AIM)

**MINIMUM VECTORING ALTITUDE/MVA—** The lowest MSL altitude at which an IFR aircraft will be vectored by a radar controller, except as otherwise authorized for radar approaches, departures, and missed approaches. The altitude meets IFR obstacle clearance criteria. It may be lower than the published MEA along an airway or J-route segment. It may be utilized for radar vectoring only upon the controller's determination that an adequate radar return is being received from the aircraft being controlled. Charts depicting minimum vectoring altitudes are normally available only to the controllers and not to pilots. (Refer to AIM)

***MISSED APPROACH—***

1. A maneuver conducted by a pilot when an instrument approach cannot be completed to a landing. The route of flight and altitude are shown on instrument approach procedure charts. A pilot executing a missed approach prior to the Missed Approach Point (MAP) must continue along the final approach to the MAP. The pilot may climb immediately to the altitude specified in the missed approach procedure.
2. A term used by the pilot to inform ATC that he is executing the missed approach.
3. At locations where ATC radar service is provided, the pilot should conform to radar vectors when provided by ATC in lieu of the published missed approach procedure. (See Missed Approach Point) (Refer to AIM)

*ICAO—MISSED APPROACH PROCEDURE—* The procedure to be followed if, after an instrument approach, a landing is not effected, and occuring normally:

1. When the aircraft has descended to the decision height and has not established visual contact, or
2. When directed by air traffic control to pull up or to go around again.

**MISSED APPROACH POINT/MAP—** A point prescribed in each instrument approach procedure at which a missed approach procedure shall be executed if the required visual reference does not exist. (See Missed Approach, Segments of an Instrument Approach Procedure)

**MISSED APPROACH SEGMENT—** (See Segments of an Instrument Approach Procedure)

**MLS—**(See Microwave Landing System)

**MLS CATEGORIES—**

1. MLS Category I—An MLS approach procedure which provides for an approach to a height above touchdown of not less than 200 feet and a runway visual range of not less than 1,800 feet.
2. MLS Category II—Undefined until data gathering/analysis completion.
3. MLS Category III—Undefined until data gathering/analysis completion.

**MODE—** The letter or number assigned to a specific pulse spacing of radio signals transmitted or received by ground interrogator or airborne transponder components of the Air Traffic Control Radar Beacon System (ATCRBS). Mode A (military Mode 3) and Mode C (altitude reporting) are used in air traffic control. (See Transponder, Interrogator, Radar) (Refer to AIM)

*ICAO—MODE (SSR MODE)—* The letter or number assigned to a specific pulse spacing of the interrogation signals transmitted by an interrogator. There are 4 modes, A, B, C and D corresponding to four different interrogation pulse spacings.

**MOVEMENT AREA—** The runways, taxiways, and other areas of an airport/heliport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports/heliports with a tower, specific approval for entry onto the movement area must be obtained from ATC.

*ICAO—MOVEMENT AREA—* That part of an aerodrome intended for the surface movement of aircraft, including the maneuvering area and aprons.

**MOVING TARGET INDICATOR/MTI—** An electronic device which will permit radar scope presentation only from targets which are in motion. A partial remedy for ground clutter.

**MSAW—** (See Minimum Safe Altitude Warning)

**MULTICOM—** A mobile service not open to publis correspondence used to provide communications essential to conduct the activities being performed by or directed from private aircraft (FAR 87.277).

**NAS STAGE A—** The en route ATC system's radar, computers and computer programs, controller plan view displays (PVDs/Radar Scopes), input/output devices, and the related communications equipment which are integrated to form the heart of the automated IFR air traffic control system. This equipment performs Flight Data Processing (FDP) and Radar Data Processing (RDP). It interfaces with automated terminal systems and is used in the control of en route IFR aircraft. (Refer to AIM)

**NATIONAL AIRSPACE SYSTEM/NAS—** The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures, technical information, and manpower and material. Included are system components shared jointly with the military.

**NATIONAL BEACON CODE ALLOCATION PLAN AIRSPACE/NBCAP AIRSPACE—** Airspace over United States territory located within the North American continent between Canada and Mexico, including adjacent territorial waters outward to about boundaries of oceanic control areas (CTA)/Flight Information Regions (FIR). (See Flight Information Region)

**NATIONAL FLIGHT DATA CENTER/NFDC—** A facility in Washington D.C., established by FAA to operate a central aeronautical information service for the collection, validation, and dissemination of aeronautical data in support of the activities of government, industry, and the aviation community. The information is published in the National Flight Data Digest. (See National Flight Data Digest)

**NATIONAL FLIGHT DATA DIGEST/NFDD—** A daily (except weekends and Federal holidays) publication of flight information appropriate to aeronautical charts, aeronautical publications, Notices to Airmen, or other media serving the purpose of providing operational flight data essential to safe and efficient aircraft operations.

**NATIONAL SEARCH AND RESCUE PLAN—** An interagency agreement which provides for the effective utilization of all available facilities in all types of search and rescue missions.

**NAVAID CLASSES—** VOR, VORTAC, and TACAN aids are classed according to their operational use. The three classes of NAVAID's are:

T—Terminal.

L—Low altitude.

H—High altitude.

The normal service range for T, L, and H class aids is found in the AIM. Certain operational requirements make it necessary to use some of these aids at greater service ranges than specified. Extended range is made possible through flight inspection determinations. Some aids also have lesser service range due to location, terrain, frequency protection, etc. Restrictions to service range are listed in Airport/Facility Directory.

**NAVIGABLE AIRSPACE—** Airspace at and above the minimum flight altitudes prescribed in the FAR's including airspace needed for safe takeoff and landing. (Refer to FAR Part 91)

**NAVIGATIONAL AID/NAVAID—** Any visual or electronic device airborne or on the surface which provides point-to- point guidance information or position data to aircraft in flight. (See Air Navigation Facility)

**NDB—** (See Nondirectional Beacon)

***NEGATIVE—*** "No," or "permission not granted," or "that is not correct."

***NEGATIVE CONTACT—*** Used by pilots to inform ATC that:

1. Previously issued traffic is not in sight. It may be followed by the pilot's request for the controller to provide assistance in avoiding the traffic.
2. They were unable to contact ATC on a particular frequency.

**NIGHT—** The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time.

*ICAO—NIGHT—* The hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise as may be specified by the appropriate authority.

***NO GYRO APPROACH/VECTOR—*** A radar approach/vector provided in case of a malfunctioning gyro-compass or directional gyro. Instead of providing the pilot with headings to be flown, the controller observes the radar track and issues control instructions "turn right/left" or "stop turn" as appropriate. (Refer to AIM)

**NONAPPROACH CONTROL TOWER—** Authorizes aircraft to land or takeoff at the airport controlled by the tower or to transit the airport traffic area. The primary function of a nonapproach control tower is the sequencing of aircraft in the traffic pattern and on the landing area. Nonapproach control towers also separate aircraft operating under instrument flight rules clearances from approach controls and centers. They provide ground control services to aircraft, vehicles, personnel, and equipment on the airport movement area.

**NONCOMPOSITE SEPARATION—** Separation in accordance with minima other than the composite separation minimum specified for the area concerned.

**NONDIRECTIONAL BEACON/RADIO BEACON/NDB—** An L/MF or UHF radio beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his bearing to or from the radio beacon and "home" on or track to or from the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator. (See Compass Locator, Automatic Direction Finder)

**NONPRECISION APPROACH PROCEDURE/NONPRECISION APPROACH—** A standard instrument approach procedure in which no electronic glide slope is provided; e.g., VOR, TACAN, NDB, LOC, ASR, LDA, or SDF approaches.

**NONRADAR—** Precedes other terms and generally means without the use of radar, such as:

1. Nonradar Route—A flight path or route over which the pilot is performing his own navigation. The pilot may be receiving radar separation, radar monitoring, or other ATC services while on a nonradar route. (See Radar Route)
2. Nonradar Approach—Used to describe instrument approaches for which course guidance on final approach is not provided by ground- based precision or surveillance radar. Radar vectors to the final approach course may or may not be provided by ATC. Examples of nonradar approaches are VOR, NDB, TACAN, and ILS/MLS approaches. (See Final Approach—IFR, Final Approach Course, Radar Approach, Instrument Approach Procedure)
3. Nonradar Separation—The spacing of aircraft in accordance with established minima without the use of radar; e.g., vertical, lateral, or longitudinal separation. (See Radar Separation)

*ICAO—NonRadar Separation—* The separation used when aircraft position information is derived from sources other than radar.

4. Nonradar Arrival—An arriving aircraft that is not being vectored to the final approach course for an instrument approach or towards the airport for a visual approach. The aircraft may or may not be in a radar environment and may or may not be receiving radar separation, radar monitoring, or other services provided by ATC. (See Radar Arrival, Radar Environment)

**NONRADAR APPROACH CONTROL—** An ATC facility providing approach control service without the use of radar. (See Approach Control, Approach Control Service)

***NORDO—*** (See Lost Communications)

**NORTH AMERICAN ROUTE—** A numerically coded route preplanned over existing airway and route systems to and from specific coastal fixes serving the North Atlantic. North American Routes consist of the following:

1. Common Route/Portion—That segment of a North American Route between the inland navigation facility and the coastal fix.
2. Non-Common Route/Portion—That segment of a North American Route between the inland navigation facility and a designated North American terminal.
3. Inland Navigation Facility—A navigation aid on a North American Route at which the common route and/or the non-common route begins or ends.
4. Coastal Fix—A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

**NOTICES TO AIRMEN PUBLICATION—** A publication designed primarily as a pilot's operational manual containing current NOTAM information considered essential to the safety of flight as well as supplemental data to other aeronautical publications. (See Notice to Airmen/NOTAM)

**NOTICE TO AIRMEN/NOTAM—** A notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment, condition, or change in any component (facility, service, or procedure of, or hazard in the National Airspace System) the timely knowledge of which is essential to personnel concerned with flight operations.

1. NOTAM(D)—A NOTAM given (in addition to local dissemination) distant dissemination via teletypewriter beyond the area of responsibility of the Flight Service Station. These NOTAM's will be stored and repeated hourly until canceled.

2. NOTAM(L)—A NOTAM given local dissemination by voice (teletypewriter where applicable) and a wide variety of means, such as telautograph, teleprinter, facsimile reproduction, hot line, telecopier, telegraph, and telephone, to satisfy local user requirements.
3. FDC NOTAM—A notice to airmen, regulatory in nature, transmitted by NFDC and given all-circuit dissemination.

*ICAO—NOTAM—* A notice, containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

***NUMEROUS TARGETS VICINITY (LOCATION)—*** A traffic advisory issued by ATC to advise pilots that targets on the radar scope are too numerous to issue individually. (See Traffic Advisories)

**OBSTACLE—** An existing object, object of natural growth, or terrain at a fixed geographical location or which may be expected at a fixed location within a prescribed area with reference to which vertical clearance is or must be provided during flight operation.

**OBSTRUCTION—** Any object/obstacle exceeding the obstruction standards specified by FAR Part 77, Subpart C.

**OBSTRUCTION LIGHT—** A light or one of a group of lights, usually red or white, frequently mounted on a surface structure or natural terrain to warn pilots of the presence of an obstruction.

**OFF-ROUTE VECTOR—** A vector by ATC which takes an aircraft off a previously assigned route. Altitudes assigned by ATC during such vectors provide required obstacle clearance.

**OFFSET PARALLEL RUNWAYS—** Staggered runways having centerlines which are parallel.

***ON COURSE—***

1. Used to indicate that an aircraft is established on the route centerline.
2. Used by ATC to advise a pilot making a radar approach that his aircraft is lined up on the final approach course. (See On-Course Indication)

**ON-COURSE INDICATION—** An indication on an instrument, which provides the pilot a visual means of determining that the aircraft is located on the centerline of a given navigational track, or an indication on a radar scope that an aircraft is on a given track.

**OPTION APPROACH—** An approach requested and conducted by a pilot which will result in either a touch-and-go, missed approach, low approach, stop-and-go, or full stop landing. (See Cleared for the Option) (Refer to AIM)

**ORGANIZED TRACK SYSTEM—** A moveable system of oceanic tracks that traverses the North Atlantic between Europe and North America the physical position of which is determined twice daily taking the best advantage of the winds aloft.

***OUT—*** The conversation is ended and no response is expected.

**OUTER AREA (associated with ARSA)—** Nonregulatory airspace surrounding designated ARSA airports wherein ATC provides radar vectoring and sequencing on a full-time basis for all IFR and participating VFR aircraft. The service provided in the outer area is called ARSA service which includes: IFR/IFR—standard IFR separation; IFR/VFR—traffic advisories and conflict resolution; and VFR/VFR—traffic advisories and, as appropriate, safety alerts. The normal radius will be 20 nautical miles with some variations based on site-specific requirements. The outer area extends outward from the primary ARSA airport and extends from the lower limits of radar/radio coverage up to the ceiling of the approach control's delegated airspace excluding the ARSA and other airspace as appropriate. (See Controlled Airspace—Airport Radar Service Area / ARSA, Conflict Resolution)

**OUTER COMPASS LOCATOR—** (See Compass Locator)

**OUTER FIX—** A general term used within ATC to describe fixes in the terminal area, other than the final approach fix. Aircraft are normally cleared to these fixes by an Air Route Traffic Control Center or an Approach Control Facility. Aircraft are normally cleared from these fixes to the final approach fix or final approach course.

**OUTER MARKER/OM—** A marker beacon at or near the glide slope intercept altitude of an ILS approach. It is keyed to transmit two dashes per second on a 400 Hz tone, which is received aurally and visually by compatible airborne equipment. The OM is normally located four to seven miles from the runway threshold on the extended centerline of the runway. (See Marker Beacon, Instrument Landing System) (Refer to AIM)

***OVER—*** My transmission is ended; I expect a response.

**OVERHEAD APPROACH/360 OVERHEAD—** A series of predetermined maneuvers prescribed for VFR arrival of military aircraft (often in formation) for entry into the VFR traffic pattern and to proceed to a landing. The pattern usually specifies the following:

1. The radio contact required of the pilot.
2. The speed to be maintained.
3. An initial approach 3 to 5 miles in length.
4. An elliptical pattern consisting of two 180 degree turns.
5. A break point at which the first 180 degree turn is started.
6. The direction of turns.
7. Altitude (at least 500 feet above the conventional pattern).
8. A "Roll-out" on final approach not less than 1/4 mile from the landing threshold and not less than 300 feet above the ground.

**PAN-PAN—** The international radio-telephony urgency signal. When repeated three times, indicates uncertainty or alert followed by nature of urgency. (See MAYDAY) (Refer to AIM)

**PARALLEL ILS/MLS APPROACHES—** Approaches to parallel runways by IFR aircraft which, when established inbound toward the airport on the adjacent final approach courses, are radar-separated by at least 2 miles. (See Final Approach Course, Simultaneous ILS/MLS Approaches).

**PARALLEL OFFSET ROUTE—** A parallel track to the left or right of the designated or established airway/route. Normally associated with Area Navigation (RNAV) operations. (See Area Navigation)

**PARALLEL RUNWAYS—** Two or more runways at the same airport whose centerlines are parallel. In addition to runway number, parallel runways are designated as L (left) and R (right) or, if three parallel runways exist, L (left), C (center), and R (right).

**PERMANENT ECHO—** Radar signals reflected from fixed objects on the earth's surface; e.g., buildings, towers, terrain. Permanent echoes are distinguished from "ground clutter' by being definable locations rather than large areas. Under certain conditions they may be used to check radar alignment.

**PHOTO RECONNAISSANCE (PR)—** Military activity that requires locating individual photo targets and navigating to the targets at a preplanned angle and altitude. The activity normally requires a lateral route width of 16NM and altitude range of 1,500 feet to 10,000 feet AGL.

**PILOT BRIEFING/PRE-FLIGHT PILOT BRIEFING—** A service provided by the FSS to assist pilots in flight planning. Briefing items may include weather information, NOTAMS, military activities, flow control information, and other items as requested. (Refer to AIM)

**PILOT IN COMMAND—** The pilot responsible for the operation and safety of an aircraft during flight time. (Refer to FAR Part 91)

**PILOTS AUTOMATIC TELEPHONE WEATHER ANSWERING SERVICE/PATWAS—** A continuous telephone recording containing current and forecast weather information for pilots. (See Flight Service Station) (Refer to AIM)

***PILOT'S DISCRETION—*** When used in conjunction with altitude assignments, means that ATC has offered the pilot the option of starting climb or descent whenever he wishes and conducting the climb or descent at any rate he wishes. He may temporarily level off at any intermediate altitude. However, once he has vacated an altitude, he may not return to that altitude.

**PILOT WEATHER REPORT/PIREP—** A report of meteorological phenomena encountered by aircraft in flight. (Refer to AIM)

**POSITION REPORT/PROGRESS REPORT—** A report over a known location as transmitted by an aircraft to ATC. (Refer to AIM)

**POSITION SYMBOL—** A computer-generated indication shown on a radar display to indicate the mode of tracking.

**POSITIVE CONTROL—** The separation of all air traffic within designated airspace by air traffic control. (See Positive Control Area)

**POSITIVE CONTROL AREA/PCA—** (See Controlled Airspace)

**PRACTICE INSTRUMENT APPROACH—** An instrument approach procedure conducted by a VFR or an IFR aircraft for the purpose of pilot training or proficiency demonstrations.

**PRECIPITATION—** Any or all forms of water particles (rain, sleet, hail, or snow) that fall from the atmosphere and reach the surface.

**PRECISION APPROACH PROCEDURE/PRECISION APPROACH—** A standard instrument approach procedure in which an electronic glideslope/glidepath is provided; e.g., ILS/MLS and PAR. (See Instrument Landing System, Microwave Landing System, Precision Approach Radar)

**PRECISION APPROACH RADAR/PAR—** Radar equipment in some ATC facilities operated by the FAA and/or the military services at joint-use civil/military locations and separate military installations to detect and display azimuth, elevation, and range of aircraft on the final approach course to a runway. This equipment may be used to monitor certain nonradar approaches, but is primarily used to conduct a precision instrument approach (PAR) wherein the controller issues guidance instructions to the pilot based on the aircraft's position in relation to the final approach course (azimuth), the glidepath (elevation), and the distance (range) from the touchdown point on the runway as displayed on the radar scope. (See Glidepath, PAR) (Refer to AIM)

The abbreviation "PAR" is also used to denote preferential arrival routes in ARTCC computers. (See Preferential Routes)

*ICAO-PRECISION APPROACH RADAR/PAR*—Primary radar equipment used to determine the position of an aircraft during final approach, in terms of lateral and vertical deviations relative to a nominal approach path, and in range relative to touchdown.

**PREFERENTIAL ROUTES—** Preferential routes (PDR's, PAR's, and PDAR's) are adapted in ARTCC computers to accomplish inter/intrafacility controller coordination and to assure that flight data is posted at the proper control positions. Locations having a need for these specific inbound and outbound routes normally publish such routes in local facility bulletins, and their use by pilots minimizes flight plan route amendments. When the workload or traffic situation permits, controllers normally provide radar vectors or assign requested routes to minimize circuitous routing. Preferential routes are usually confined to one ARTCC's area and are referred to by the following names or acronyms:

1. Preferential Departure Route/PDR—A specific departure route from an airport or terminal area to an en route point where there is no further

need for flow control. It may be included in a Standard Instrument Departure (SID) or a Preferred IFR Route.

2. Preferential Arrival Route/PAR—A specific arrival route from an appropriate en route point to an airport or terminal area. It may be included in a Standard Terminal Arrival (STAR) or a Preferred IFR Route. The abbreviation "PAR" is used primarily within the ARTCC and should not be confused with the abbreviation for Precision Approach Radar.
3. Preferential Departure and Arrival Route/PDAR—A route between two terminals which are within or immediately adjacent to one ARTCC's area. PDAR's are not synonomous with Preferred IFR Routes but may be listed as such as they do accomplish essentially the same purpose. (See Preferred IFR Routes, NAS Stage A)

**PREFERRED IFR ROUTES—** Routes established between busier airports to increase system efficiency and capacity. They normally extend through one or more ARTCC areas and are designed to achieve balanced traffic flows among high density terminals. IFR clearances are issued on the basis of these routes except when severe weather avoidance procedures or other factors dictate otherwise. Preferred IFR Routes are listed in the Airport/Facility Directory. If a flight is planned to or from an area having such routes but the departure or arrival point is not listed in the Airport/Facility Directory, pilots may use that part of a Preferred IFR Route which is appropriate for the departure or arrival point that is listed. Preferred IFR Routes are correlated with SID's and STAR's and may be defined by airways, jet routes, direct routes between NAVAID's, Waypoints, NAVAID radials/DME, or any combinations thereof. (See Standard Instrument Departure, Standard Terminal Arrival, Preferential Routes, Center's Area) (Refer to Airport/Facility Directory and Notices to Airmen Publication)

**PREVAILING VISIBILITY—** (See Visibility)

**PROCEDURE TURN INBOUND—** That point of a procedure turn maneuver where course reversal has been completed and an aircraft is established inbound on the intermediate approach segment or final approach course. A report of "procedure turn inbound" is normally used by ATC as a position report for separation purposes. (See Final Approach Course, Procedure Turn, Segments of an Instrument Approach Procedure)

**PROCEDURE TURN/PT—** The maneuver prescribed when it is necessary to reverse direction to establish an aircraft on the intermediate approach segment or final approach course. The outbound course, direction of turn, distance within which the turn must be completed, and minimum altitude are specified in the procedure. However, unless otherwise restricted, the point at which the turn may be commenced and the type and rate of turn are left to the discretion of the pilot.

*ICAO—PROCEDURE TURN—* A maneuver in which a turn is made away from a designated track followed by a turn in the opposite direction, both turns being executed so as to permit the aircraft to intercept and proceed along the reciprocal of the designated track.

**PROFILE DESCENT—** An uninterrupted descent (except where level flight is required for speed adjustment; e.g., 250 knots at 10,000 feet MSL) from cruising altitude/level to interception of a glide slope or to a minimum altitude specified for the initial or intermediate approach segment of a nonprecision instrument approach. The profile descent normally terminates at the approach gate or where the glide slope or other appropriate minimum altitude is intercepted.

**PROGRAMMABLE INDICATOR DATA PROCESSOR/PIDP—** The PIDP is a modification to the AN/TPX-42 interrogator system currently installed in fixed RAPCON's. The PIDP detects, tracks, and predicts secondary radar aircraft targets. These are displayed by means of computer-generated symbols and alphanumeric characters depicting flight identification, aircraft altitude, ground speed, and flight plan data. Although primary radar targets are not tracked, they are displayed coincident with the secondary radar targets as well as with the other symbols and alphanumerics. The system has the capability of interfacing with ARTCC's.

**PROHIBITED AREA—** (See Special Use Airspace).

*ICAO—PROHIBITED AREA—* An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

**PROPOSED BOUNDARY CROSSING TIME/PBCT—** Each center has a PBCT parameter for each internal airport. Proposed internal flight plans are transmitted to the adjacent center if the flight time along the proposed route from the departure airport to the center boundary is less than or equal to the value of PBCT or if airport adaptation specifies transmission regardless of PBCT.

**PUBLISHED ROUTE—** A route for which an IFR altitude has been established and published; e.g., Federal Airways, Jet Routes, Area Navigation Routes, Specified Direct Routes.

**QUADRANT—** A quarter part of a circle, centered on a NAVAID, oriented clockwise from magnetic north as follows: NE quadrant 000-089, SE quadrant 090-179, SW quadrant 180-269, NW quadrant 270-359.

**QUICK LOOK—** A feature of NAS Stage A and ARTS which provides the controller the capability to display full data blocks of tracked aircraft from other control positions.

**QUOTA FLOW CONTROL/QFLOW—** A flow control procedure by which the Central Flow Control Function (CFCF) restricts traffic to the ARTC Center area having an impacted airport, thereby avoiding sector/area saturation. (See Air Traffic Control Systems Command Center) (Refer to Airport/Facility Directory)

**RADAR/RADIO DETECTION AND RANGING—** A device which, by measuring the time interval between transmission and reception of radio pulses and correlating the angular orientation of the radiated antenna beam or beams in azimuth and/or elevation, provides information on range, azimuth, and/or elevation of objects in the path of the transmitted pulses.

1. Primary Radar—A radar system in which a minute portion of a radio pulse transmitted from a site is reflected by an object and then received back at that site for processing and display at an air traffic control facility.
2. Secondary Radar/Radar Beacon/ATCRBS—A radar system in which the object to be detected is fitted with cooperative equipment in the form of a radio receiver/transmitter (transponder). Radar pulses transmitted from the searching transmitter/receiver (interrogator) site are received in the cooperative equipment and used to trigger a distinctive transmission from the transponder. This reply transmission, rather than a reflected signal, is then received back at the transmitter/receiver site for processing and display at an air traffic control facility. (See Transponder, Interrogator) (Refer to AIM)

*ICAO—RADAR—* A radio detection device which provides information on range, azimuth, and/or elevation of objects.

1. Primary Radar—A radar system which uses reflected radio signals.
2. Secondary Radar—A radar system wherein a radio signal transmitted from a radar station initiates the transmission of a radio signal from another station.

**RADAR ADVISORY—** The provision of advice and information based on radar observations. (See Advisory Service)

**RADAR APPROACH—** An instrument approach procedure which utilizes Precision Approach Radar (PAR) or Airport Surveillance Radar (ASR). (See PAR Approach, Surveillance Approach, Airport Surveillance Radar, Precision Approach Radar, Instrument Approach Procedure) (Refer to AIM)

*ICAO—RADAR APPROACH—* An approach, executed by an aircraft, under the direction of a radar controller.

**RADAR APPROACH CONTROL FACILITY—** A terminal ATC facility that uses radar and nonradar capabilities to provide approach control services to aircraft arriving, departing, or transiting airspace controlled by the facility (see Approach Control Service). Provides radar ATC services to aircraft operating in the vicinity of one or more civil and/ or military airports in a terminal area. The facility may provide services of a ground controlled approach (GCA); i.e., ASR and PAR approaches. A radar approach control facility may be operated by FAA, USAF, US Army, USN, USMC, or jointly by FAA and a military service. Specific facility nomenclatures are used for administrative purposes only and are related to the physical location of the facility and the operating service generally as follows:

Army Radar Approach Control/ARAC (Army).

Radar Air Traffic Control Facility/ RATCF (Navy/FAA).

Radar Approach Control/RAPCON (Air Force/ FAA).

Terminal Radar Approach Control/TRACON (FAA).

Tower/Airport Traffic Control Tower/ATCT (FAA). (Only those towers delegated approach control authority.)

**RADAR ARRIVAL—** An arriving aircraft which is being vectored to the final approach course for an instrument approach or toward the airport for a visual approach. (See Radar Approach, Visual Approach)

**RADAR BEACON—** (See Radar)

***RADAR CONTACT—***

1. Used by ATC to inform an aircraft that it is identified on the radar display and radar flight following will be provided until radar identification is terminated. Radar service may also be provided within the limits of necessity and capability. When a pilot is informed of "radar contact," he automatically discontinues reporting over compulsory reporting points. (See Radar Flight Following, Radar Contact Lost, Radar Service, Radar Service Terminated). (Refer to AIM)
2. The term used to inform the controller that the aircraft is identified and approval is granted for the aircraft to enter the receiving controllers airspace.

*ICAO—RADAR CONTACT—* The situation which exists when the radar blip of a particular aircraft is seen and identified on a radar display.

***RADAR CONTACT LOST—*** Used by ATC to inform a pilot that radar identification of his aircraft has been lost. The loss may be attributed to several things including the aircraft's merging with weather or ground clutter, the aircraft's flying below radar line of sight, the aircraft's entering an area of poor radar return, or a failure of the aircraft transponder or the ground radar equipment. (See Clutter, Radar Contact)

**RADAR ENVIRONMENT—** An area in which radar service may be provided. (See Radar Contact, Radar Service, Additional Services, Traffic Advisories)

**RADAR FLIGHT FOLLOWING—** The observation of the progress of radar identified aircraft, whose primary navigation is being provided by the pilot, wherein the controller retains and correlates the aircraft identity with the appropriate target or target symbol displayed on the radar scope. (See Radar Contact, Radar Service) (Refer to AIM)

**RADAR IDENTIFICATION—** The process of ascertaining that an observed radar target is the radar return from a particular aircraft. (See Radar Contact, Radar Service)

*ICAO—RADAR IDENTIFICATION—*The process of correlating a particular radar blip with a specific aircraft.

**RADAR IDENTIFIED AIRCRAFT—** An aircraft, the position of which has been correlated with an observed target or symbol on the radar display. (See Radar Contract, Radar Contact Lost)

**RADAR MONITORING—** (See Radar Service)

**RADAR NAVIGATIONAL GUIDANCE—** (See Radar Service)

**RADAR POINT OUT/POINT OUT—** Used between controllers to indicate radar handoff action where the initiating controller plans to retain communications with an aircraft penetrating the other controller's airspace and additional coordination is required.

**RADAR ROUTE—** A flight path or route over which an aircraft is vectored. Navigational guidance and altitude assignments are provided by ATC. (See Flight Path, Route)

**RADAR SEPARATION—** (See Radar Service)

**RADAR SERVICE—** A term which encompasses one or more of the following services based on the use of radar which can be provided by a controller to a pilot of a radar identified aircraft.

1. Radar Separation.—Radar spacing of aircraft in accordance with established minima.

*ICAO—RADAR SEPARATION—* The separation used when aircraft position information is derived from radar sources.

2. Radar Navigational Guidance.—Vectoring aircraft to provide course guidance.
3. Radar Monitoring.—The radar flight-following of aircraft, whose primary navigation is being performed by the pilot, to observe and note deviations from its authorized flight path, airway, or route. When being applied specifically to radar monitoring of instrument approaches; i.e., with precision approach radar (PAR) or radar monitoring of simultaneous ILS/MLS approaches, it includes advice and instructions whenever an aircraft nears or exceeds the prescribed PAR safety limit or simultaneous ILS/MLS no transgression zone. (See Additional Services, Traffic Advisories)

*ICAO—RADAR MONITORING—* The use of radar for the purpose of providing aircraft with information and advice relative to significant deviations from nominal flight path.

*ICAO—RADAR SERVICE—* Term used to indicate a service provided directly by means of radar.

***RADAR SERVICE TERMINATED—*** Used by ATC to inform a pilot that he will no longer be provided any of the services that could be received while in radar contact. Radar service is automatically terminated, and the pilot is not advised in the following cases:

1. An aircraft cancels its IFR flight plan, except within a TCA, TRSA, ARSA, or where Stage II service is provided.
2. An aircraft conducting an instrument, visual, or contact approach has landed or has been instructed to change to advisory frequency.
3. An arriving VFR aircraft, receiving radar service to a tower-controlled airport within a TCA, TRSA, ARSA, or where Stage II service is provided, has landed; or to all other airports, is instructed to change to tower or advisory frequency.
4. An aircraft completes a radar approach.

**RADAR SURVEILLANCE—** The radar observation of a given geographical area for the purpose of performing some radar function.

**RADAR TRAFFIC ADVISORIES—** (See Traffic Advisories)

**RADAR TRAFFIC INFORMATION SERVICE—** (See Traffic Advisories)

**RADAR WEATHER ECHO INTENSITY LEVELS—** Existing radar systems cannot detect turbulence. However, there is a direct correlation between the degree of turbulence and other weather features associated with thunderstorms and the radar weather echo intensity. The National Weather Service has categorized six levels of radar weather echo intensity. The levels are sometimes expressed during communications as "VIP LEVEL" 1 through 6 (derived from the component of the weather radar that produces the information—Video Integrator and Processor). The following list gives the weather features likely to be associated with these levels during thunderstorm weather situations:

1. Level 1 (WEAK) and Level 2 (MODERATE). Light to moderate turbulence is possible with lightning.
2. Level 3 (STRONG). Severe turbulence possible, lightning.
3. Level 4 (VERY STRONG). Severe turbulence likely, lightning.
4. Level 5 (INTENSE). Severe turbulence, lightning, organized wind gusts, hail likely.
5. Level 6 (EXTREME). Severe turbulence, large hail, lightning, extensive wind gusts, and turbulence.

**RADIAL—** A magnetic bearing extending from a VOR/VORTAC/TACAN navigation facility.

**RADIO—**

1. A device used for communication.
2. Used to refer to a flight service station; e.g., "Seattle Radio" is used to call Seattle FSS.

**RADIO ALTIMETER/RADAR ALTIMETER—** Aircraft equipment which makes use of the reflection of radio waves from the ground to determine the height of the aircraft above the surface.

**RADIO BEACON—** (See Nondirectional Beacon)

**RADIO MAGNETIC INDICATOR/RMI—** An aircraft navigational instrument coupled with a gyro compass or similar compass that indicates the direction of a selected NAVAID and indicates bearing with respect to the heading of the aircraft.

**RAMP—** (See Apron)

***READ BACK—*** Repeat my message back to me.

**RECEIVING CONTROLLER/FACILITY—** A controller/facility receiving control of an aircraft from another controller/facility.

***REDUCE SPEED TO (SPEED)—*** (See Speed Adjustment)

**RELEASE TIME—** A departure time restriction issued to a pilot by ATC (either directly or through an authorized relay) when necessary to separate a departing aircraft from other traffic.

*ICAO—RELEASE TIME—*Time prior to which an aircraft should be given further clearance or prior to which it should not proceed in case of radio failure.

**REMOTE COMMUNICATIONS AIR/GROUND FACILITY/RCAG—** An unmanned VHF/UHF transmitter/receiver facility which is used to expand ARTCC air/ground communications coverage and to facilitate direct contact between pilots and controllers. RCAG facilities are sometimes not equipped with emergency frequencies 121.5 MHz and 243.0 MHz. (Refer to AIM)

**REMOTE COMMUNICATIONS OUTLET/RCO AND REMOTE TRANSMITTER/RECEIVER/RTR—** An unmanned communications facility remotely controlled by air traffic personnel. RCO's serve FSS's. RTR's serve terminal ATC facilities. An RCO or RTR may be UHF or VHF and will extend the communication range of the air traffic facility. There are several classes of RCO's and RTR's. The class is determined by the number of transmitters or receivers. Classes A through G are used primarily for air/ground purposes. RCO and RTR class O facilities are nonprotected outlets subject to undetected and prolonged outages. RCO (O's) and RTR (O's) were established for the express purpose of providing ground-to-ground communications between air traffic control specialists and pilots located at a satellite airport for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times. As a secondary function, they may be used for advisory purposes whenever the aircraft is below the coverage of the primary air/ground frequency.

**REMOTE TRANSMITTER/RECEIVER/RTR—** (See Remote Communications Outlet)

***REPORT—*** Used to instruct pilots to advise ATC of specified information; e.g., "Report passing Hamilton VOR."

**REPORTING POINT—** A geographical location in relation to which the position of an aircraft is reported. (See Compulsory Reporting Point) (Refer to AIM)

*ICAO—REPORTING POINT—* A specified geographical location in relation to which the position of an aircraft can be reported.

***REQUEST FULL ROUTE CLEARANCE/FRC—*** Used by pilots to request that the entire route of flight be read verbatim in an ATC clearance. Such request should be made to preclude receiving an ATC clearance based on the original filed flight plan when a filed IFR flight plan has been revised by the pilot, company, or operations prior to departure.

**RESCUE COORDINATION CENTER/RCC—** A search and rescue (SAR) facility equipped and manned to coordinate and control SAR operations in an area designated by the SAR plan. The U.S. Coast Guard and the U.S. Air Force have responsibility for the operation of RCC's.

*ICAO—RESCUE CO-ORDINATION CENTRE—* A unit responsible for promoting efficient organization of search and rescue service and for co-ordinating the conduct of search and rescue operations within a search and rescue region.

**RESTRICTED AREA—** (See Special Use Airspace).

*ICAO—RESTRICTED AREA—*Airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

***RESUME OWN NAVIGATION—*** Used by ATC to advise a pilot to resume his own navigational responsibility. It is issued after completion of a radar vector or when radar contact is lost while the aircraft is being radar vectored. (See Radar Contact Lost, Radar Service Terminated)

**RNAV—** (See Area Navigation)

**RNAV APPROACH—** An instrument approach procedure which relies on aircraft area navigation equipment for navigational guidance. (See Instrument Approach Procedure, Area Navigation)

**ROAD RECONNAISSANCE (RC)—** Military activity requiring navigation along roads, railroads, and rivers. Reconnaissance route/route segments are seldom along a straight line and normally require a lateral route width of 10NM to 30NM and an altitude range of 500 feet to 10,000 feet AGL.

***ROGER—*** I have received all of your last transmission. It should not be used to answer a question requiring a yes or a no answer. (See Affirmative, Negative)

**ROLLOUT RVR—** (See Visibility)

**ROUTE—** A defined path, consisting of one or more courses in a horizontal plane, which aircraft traverse over the surface of the earth. (See Airway, Jet Route, Published Route, Unpublished Route)

**ROUTE SEGMENT—** As used in Air Traffic Control, a part of a route that can be defined by two navigational fixes, two NAVAID's, or a fix and a NAVAID. (See Fix, Route)

*ICAO—ROUTE SEGMENT—*A portion of a route to be flown, as defined by two consecutive significant points specified in a flight plan.

**RUNWAY—** A defined rectangular area on a land airport prepared for the landing and takeoff run of aircraft along its length. Runways are normally numbered in relation to their magnetic direction rounded off to the nearest 10 degrees; e.g., Runway 01, Runway 25. (See Parallel Runways)

*ICAO—RUNWAY—*A defined rectangular area, on a land aerodrome prepared for the landing and takeoff run of aircraft along its length.

**RUNWAY CENTERLINE LIGHTING—** (See Airport Lighting)

**RUNWAY CONDITION READING/RCR—** Numerical decelerometer readings relayed by air traffic controllers at USAF and certain civil bases for use by the pilot in determining runway braking action. These readings are routinely relayed only to USAF and Air National Guard Aircraft. (See Braking Action)

**RUNWAY END IDENTIFIER LIGHTS—** (See Airport Lighting)

**RUNWAY GRADIENT—** The average slope, measured in percent, between two ends or points on a runway. Runway gradient is depicted on Government aerodrome sketches when total runway gradient exceeds 0.3%.

***RUNWAY HEADING—*** The magnetic direction indicated by the runway number. When cleared to "fly/maintain runway heading," pilots are expected to comply with the ATC clearance by flying the heading indicated by the runway number without applying any drift correction; e.g., Runway 4, 040° magnetic heading; Runway 20, 200° magnetic heading.

**RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY—** Any runway or runways currently being used for takeoff or landing. When multiple runways are used, they are all considered active runways.

**RUNWAY LIGHTS—** (See Airport Lighting)

**RUNWAY MARKINGS—** (See Airport Marking Aids.)

**RUNWAY PROFILE DESCENT—** An instrument flight rules (IFR) air traffic control arrival procedure to a runway published for pilot use in graphic and/or textual form and may be associated with a STAR. Runway Profile Descents provide routing and may depict crossing altitudes, speed restrictions, and headings to be flown from the en route structure to the point where the pilot will receive clearance for and execute an instrument approach procedure. A Runway Profile Descent may apply to more than one runway if so stated on the chart. (Refer to AIM)

**RUNWAY USE PROGRAM—** A noise abatement runway selection plan designed to enhance noise abatement efforts with regard to airport communities for arriving and departing aircraft. These plans are developed into runway use programs and apply to all turbojet aircraft 12,500 pounds or heavier; turbojet aircraft less than 12,500 pounds are included only if the airport proprietor determines that the aircraft creates a noise problem. Runway use programs are coordinated with FAA offices, and safety criteria used in these programs are developed by the Office of Flight Operations. Runway use programs are administered by the Air Traffic Service as "Formal" or "Informal" programs.

1. Formal Runway Use Program—An approved noise abatement program which is defined and acknowledged in a Letter of Understanding between Flight Operations, Air Traffic Service, the airport proprietor, and the users. Once established, participation in the program is mandatory for aircraft operators and pilots as provided for in FAR 91.87.
2. Informal Runway Use Program—An approved noise abatement program which does not require a Letter of Understanding, and participation in the program is voluntary for aircraft operators/pilots.

**RUNWAY VISIBILITY VALUE—** (See Visibility)

**RUNWAY VISUAL RANGE—** (See Visibility)

**SAFETY ALERT—** A safety alert issued by ATC to aircraft under their control if ATC is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain, obstructions, or other aircraft. The controller may discontinue the issuance of further alerts if the pilot advises he is taking action to correct the situation or has the other aircraft in sight.

1. Terrain/Obstruction Alert—A safety alert issued by ATC to aircraft under their control if ATC is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain/obstructions; e.g., "Low Altitude Alert, check your altitude immediately."
2. Aircraft Conflict Alert—A safety alert issued by ATC to aircraft under their control if ATC is aware of an aircraft that is not under their control at an altitude which, in the controller's judgment, places both aircraft in unsafe proximity to each other. With the alert, ATC will offer the pilot an alternate course of action when feasible; e.g., "Traffic Alert, advise you turn right heading zero niner zero or climb to eight thousand immediately."

The issuance of a safety alert is contingent upon the capability of the controller to have an awareness of an unsafe condition. The course of action provided will be predicated on other traffic under ATC control. Once the alert is issued, it is solely the pilot's prerogative to determine what course of action, if any, he will take.

**SAIL BACK—** A maneuver during high wind conditions (usually with power off) where float plane movement is controlled by water rudders/opening and closing cabin doors.

***SAY AGAIN—*** Used to request a repeat of the last transmission. Usually specifies transmission or portion thereof not understood or received; e.g., "Say again all after ABRAM VOR."

***SAY ALTITUDE—*** Used by ATC to ascertain an aircraft's specific altitude/flight level. When the aircraft is climbing or descending, the pilot should state the indicated altitude rounded to the nearest 100 feet.

***SAY HEADING—*** Used by ATC to request an aircraft heading. The pilot should state the actual heading of the aircraft.

**SEA LANE—** A designated portion of water outlined by visual surface markers for and intended to be used by aircraft designed to operate on water.

**SEARCH AND RESCUE FACILITY—** A facility responsible for maintaining and operating a search and rescue (SAR) service to render aid to persons and property in distress. It is any SAR unit, station, NET, or other operational activity which can be usefully employed during an SAR Mission; e.g., a Civil Air Patrol Wing, or a Coast Guard Station. (See Search and Rescue)

**SEARCH AND RESCUE/SAR—** A service which seeks missing aircraft and assists those found to be in need of assistance. It is a cooperative effort using the facilities and services of available Federal, state and local agencies. The U.S. Coast Guard is responsible for coordination of search and rescue for the Maritime Region, and the U.S. Air Force is responsible for search and rescue for the Inland Region. Information pertinent to search and rescue should be passed through any air traffic facility or be transmitted directly to the Rescue Coordination Center by telephone. (See Flight Service Station, Rescue Coordination Center) (Refer to AIM)

**SEE AND AVOID—** A visual procedure wherein pilots of aircraft flying in visual meteorological conditions (VMC), regardless of type of flight plan, are charged with the responsibility to observe the presence of other aircraft and to maneuver their aircraft as required to avoid the other aircraft. Right-of-way rules are contained in FAR, Part 91. (See Instrument Flight Rules, Visual Flight Rules, Visual Meteorological Conditions, Instrument Meteorological Conditions)

**SEGMENTED CIRCLE—** A system of visual indicators designed to provide traffic pattern information at airports without operating control towers. (Refer to AIM)

**SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE—** An instrument approach procedure may have as many as four separate segments depending on how the approach procedure is structured.

1. Initial Approach—The segment between the initial approach fix and the intermediate fix or the point where the aircraft is established on the intermediate course or final approach course.

2. Intermediate Approach—The segment between the intermediate fix or point and the final approach fix.

3. Final Approach—The segment between the final approach fix or point and the runway, airport, or missed approach point.

4. Missed Approach—The segment between the missed approach point or the point of arrival at decision height and the missed approach fix at the prescribed altitude. (Refer to FAR, Part 97)

*ICAO*

1. *Initial Approach*—That part of an instrument approach procedure consisting of the first approach to the first navigational facility associated with the procedure, or to a predetermined fix.

2. *Intermediate Approach*—That part of an instrument approach procedure from the first arrival at the first navigational facility or predetermined fix, to the beginning of the final approach.

3. *Final Approach*—That part of an instrument approach procedure from the time the aircraft has:
   a. Completed the last procedure turn or base turn where one is specified, or
   b. Crossed a specified fix, or
   c. Intercepted the last track specified for the procedures until it has crossed a point in the vicinity of an aerodrome from which:
      (1) A landing can be made, or
      (2) A missed approach procedure is initiated.

4. *Missed Approach Procedure*—The procedure to be followed if, after an instrument approach, a landing is not effected and occurring normally:
   a. When the aircraft has descended to the decision height and has not established visual contact, or
   b. When directed by air traffic control to pull up or to go around again.

**SEPARATION—** In air traffic control, the spacing of aircraft to achieve their safe and orderly movement in flight and while landing and taking off. (See Separation Minima)

*ICAO—SEPARATION*—Spacing between aircraft, levels or tracks.

**SEPARATION MINIMA—** The minimum longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of air traffic control procedures. (See Separation)

**SEVERE WEATHER AVOIDANCE PLAN/SWAP—** An approved plan to minimize the affect of severe weather on traffic flows in impacted terminal and/or ARTCC areas. SWAP is normally implemented to provide the least disruption to the ATC system when flight through portions of airspace is difficult or impossible due to severe weather.

**SHORT RANGE CLEARANCE—** A clearance issued to a departing IFR flight which authorizes IFR flight to a specific fix short of the destination while air traffic control facilities are coordinating and obtaining the complete clearance.

**SHORT TAKEOFF AND LANDING AIRCRAFT/STOL AIRCRAFT—** An aircraft which, at some weight within its approved operating weight, is capable of operating from a STOL runway in compliance with the applicable STOL characteristics, airworthiness, operations, noise, and pollution standards. (See Vertical Takeoff and Landing Aircraft)

**SIDESTEP MANEUVER—** A visual maneuver accomplished by a pilot at the completion of an instrument approach to permit a straight-in landing on a parallel runway not more than 1,200 feet to either side of the runway to which the instrument approach was conducted. (Refer to AIM)

***SIGMET* /WS/SIGNIFICANT METEOROLOGICAL INFORMATION—** A weather advisory issued concerning weather significant to the safety of all aircraft. SIGMET advisories cover severe and extreme turbulence, severe icing, and widespread dust or sandstorms that reduce visibility to less than 3 miles. (See Convective SIGMET, CWA, and AIRMET) (Refer to AIM).

*ICAO–SIGMET INFORMATION*— Information prepared by a meteorological watch office regarding the occurrence or expected occurrence of one or more of the following phenomena:

1. At subsonic cruising levels:

   Active thunderstorm area.
   Tropical revolving storm.
   Severe line squall.
   Heavy hail.
   Severe turbulence.
   Severe icing.
   Marked mountain waves.
   Widespread sandstorm/duststorm.

2. At transonic levels and supersonic cruising levels:

   Moderate or severe turbulence.
   Cumulonimbus clouds.
   Hail.

**SIMPLIFIED DIRECTIONAL FACILITY/SDF**— A NAVAID used for nonprecision instrument approaches. The final approach course is similar to that of an ILS localizer except that the SDF course may be offset from the runway, generally not more than 3 degrees, and the course may be wider than the localizer, resulting in a lower degree of accuracy. (Refer to AIM)

**SIMULATED FLAMEOUT/SFO**— A practice approach by a jet aircraft (normally military) at idle thrust to a runway. The approach may start at a relatively high altitude over a runway (high key) and may continue on a relatively high and wide downwind leg with a high rate of descent and a continuous turn to final. It terminates in a landing or low approach. The purpose of this approach is to simulate a flameout. (See Flameout)

**SIMULTANEOUS ILS/MLS APPROACHES**— An approach system permitting simultaneous ILS/MLS approaches to airports having parallel runways separated by at least 4,300 feet between centerlines. Integral parts of a total system are ILS/MLS, radar, communications, ATC procedures, and appropriate airborne equipment. (See Parallel Runways) (Refer to AIM)

**SINGLE DIRECTION ROUTES**— Preferred IFR Routes which are sometimes depicted on high altitude en route charts and which are normally flown in one direction only. (See Preferred IFR Route) (Refer to Airport/Facility Directory)

**SINGLE FREQUENCY APPROACH/SFA**— A service provided under a letter of agreement to military single-piloted turbojet aircraft which permits use of a single UHF frequency during approach for landing. Pilots will not normally be required to change frequency from the beginning of the approach to touchdown except that pilots conducting an en route descent are required to change frequency when control is transferred from the air route traffic control center to the terminal facility. The abbreviation "SFA" in the DOD FLIP IFR Supplement under "Communications" indicates this service is available at an aerodrome.

**SINGLE-PILOTED AIRCRAFT**— A military turbojet aircraft possessing one set of flight controls, tandem cockpits, or two sets of flight controls but operated by one pilot is considered single-piloted by ATC when determining the appropriate air traffic service to be applied. (See Single Frequency Approach)

**SLASH**— A radar beacon reply displayed as an elongated target.

**SLOW TAXI**— To taxi a float plane at low power or low RPM.

***SPEAK SLOWER***— Used in verbal communications as a request to reduce speech rate.

**SPECIAL EMERGENCY**— A condition of air piracy or other hostile act by a person(s) aboard an aircraft which threatens the safety of the aircraft or its passengers.

**SPECIAL IFR**— (See Fixed-Wing Special IFR)

**SPECIAL INSTRUMENT APPROACH PROCEDURE**— (See Instrument Approach Procedure)

**SPECIAL USE AIRSPACE**— Airspace of defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. TYPES OF SPECIAL USE AIRSPACE:

1. Alert Area—Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft. Alert Areas are depicted on aeronautical charts for the information of nonparticipating pilots. All activities within an Alert Area are conducted in accordance with Federal Aviation Regulations, and pilots of participating aircraft as well as pilots transiting the area are equally responsible for collision avoidance.

2. Controlled Firing Area—Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons and property on the ground.

3. Military Operations Area (MOA)—An MOA is an airspace assignment of defined vertical and lateral dimensions established outside positive control areas to separate/segregate certain military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. (Refer to AIM).

4. Prohibited Area—Designated airspace within which the flight of aircraft is prohibited. (Refer to En Route Charts, AIM).

5. Restricted Area—Airspace designated under FAR, Part 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use and IFR/VFR operations in the area may be authorized by the controlling ATC facility when it is not being utilized by the using agency. Restricted areas are depicted on en route charts.

Where joint use is authorized, the name of the ATC controlling facility is also shown. (Refer to FAR, Part 73 and AIM)

6. Warning Area—Airspace which may contain hazards to nonparticipating aircraft in international airspace.

**SPECIAL VFR CONDITIONS—** Weather conditions in a control zone which are less than basic VFR and in which some aircraft are permitted flight under Visual Flight Rules. (See Special VFR Operations) (Refer to FAR, Part 91)

**SPECIAL VFR OPERATIONS—** Aircraft operating in accordance with clearances within control zones in weather conditions less than the basic VFR weather minima. Such operations must be requested by the pilot and approved by ATC. (See Special VFR Conditions)

*ICAO—SPECIAL VFR FLIGHT*—A controlled VFR flight authorized by air traffic control to operate within a control zone under meteorological conditions below the visual meteorological conditions.

**SPEED—** (See Airspeed, Groundspeed)

**SPEED ADJUSTMENT—** An ATC procedure used to request pilots to adjust aircraft speed to a specific value for the purpose of providing desired spacing. Pilots are expected to maintain a speed of plus or minus 10 knots or 0.02 mach number of the specified speed.

Examples of speed adjustments are:

1. "Increase/reduce speed to mach point (number)."
2. "Increase/reduce speed to (speed in knots)" or "Increase/reduce speed (number of knots) knots."
3. "If practical, reduce speed to (speed);" or "If practical, reduce speed (number of) knots."

**SPEED BRAKES/DIVE BRAKES—** Moveable aerodynamic devices on aircraft that reduce airspeed during descent and landing.

***SQUAWK (Mode, Code, Function)—*** Activate specific modes/codes/functions on the aircraft transponder; e.g., "Squawk three/alpha, two one zero five, low." (See Transponder)

**STAGE I/II/III SERVICE—** (See Terminal Radar Program)

**STANDARD INSTRUMENT APPROACH PROCEDURE/SIAP—** (See Instrument Approach Procedure)

**STANDARD INSTRUMENT DEPARTURE/SID—** A preplanned instrument flight rule (IFR) air traffic control departure procedure printed for pilot use in graphic and/or textual form. SID's provide transition from the terminal to the appropriate en route structure. (See IFR Takeoff Minima and Departure Procedures) (Refer to AIM)

**STANDARD RATE TURN—** A turn of three degrees per second.

**STANDARD TERMINAL ARRIVAL/STAR—** A preplanned instrument flight rule (IFR) air traffic control arrival procedure published for pilot use in graphic and/or textual form. STAR's provide transition from the en route structure to an outer fix or an instrument approach fix/arrival waypoint in the terminal area.

***STAND BY—*** Means the controller or pilot must pause for a few seconds, usually to attend to other duties of a higher priority. Also means to wait as in "stand by for clearance." If a delay is lengthy, the caller should reestablish contact.

**STATIONARY RESERVATIONS—** Altitude reservations which encompass activities in a fixed area. Stationary reservations may include activities, such as special tests of weapons systems or equipment, certain U.S. Navy carrier, fleet, and anti-submarine operations, rocket, missile and drone operations, and certain aerial refueling or similar operations.

**STEPDOWN FIX—** A fix permitting additional descent within a segment of an instrument approach procedure by identifying a point at which a controlling obstacle has been safely overflown.

**STEP TAXI—** To taxi a float plane at full power or high RPM.

**STEP TURN—** A maneuver used to put a float plane in a planing configuration prior to entering an active sea lane for takeoff. The STEP TURN maneuver should only be used upon pilot request.

**STEREO ROUTE—** A routinely used route of flight established by users and ARTCC's identified by a coded name; e.g., ALPHA 2. These routes minimize flight plan handling and communications.

***STOP ALTITUDE SQUAWK—*** Used by ATC to inform an aircraft to turn-off the automatic altitude reporting feature of its transponder. It is issued when the verbally reported altitude varies 300 feet or more from the automatic altitude report. (See Altitude Readout, Transponder)

**STOP AND GO—** A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. (See Low Approach, Option Approach)

**STOPOVER FLIGHT PLAN—** A flight plan format which permits in a single submission the filing of a sequence of flight plans through interim full-stop destinations to a final destination.

***STOP SQUAWK (Mode or Code)—*** Used by ATC to tell the pilot to turn specified functions of the aircraft transponder off. (See Stop Altitude Squawk, Transponder)

***STOP STREAM/BURST/BUZZER—*** Used by ATC to request a pilot to suspend electronic countermeasure activity. (See Jamming)

**STOPWAY—** An area beyond the takeoff runway designated by the airport authorities as able to support an airplane during an aborted takeoff. (Refer to FAR, Part 1)

**STRAIGHT-IN APPROACH—IFR—** An instrument approach wherein final approach is begun without first having executed a procedure turn, not necessarily completed with a straight-in landing or made to straight-in landing minimums. (See Straight-in Landing, Landing Minimums, Straight-in Approach-VFR)

**STRAIGHT-IN APPROACH—VFR—** Entry into the traffic pattern by interception of the extended runway centerline (final approach course) without executing any other portion of the traffic pattern. (See Traffic Pattern)

**STRAIGHT-IN LANDING—** A landing made on a runway aligned within 30° of the final approach course following completion of an instrument approach. (See Straight-in Approach-IFR)

**STRAIGHT-IN LANDING MINIMUMS/STRAIGHT-IN MINIMUMS—** (See Landing Minimums)

**SUBSTITUTE ROUTE—** A route assigned to pilots when any part of an airway or route is unusable because of NAVAID status. These routes consist of:

1. Substitute routes which are shown on U.S. Government charts.
2. Routes defined by ATC as specific NAVAID radials or courses.
3. Routes defined by ATC as direct to or between NAVAID's.

**SUNSET AND SUNRISE—** The mean solar times of sunset and sunrise as published in the Nautical Almanac, converted to local standard time for the locality concerned. Within Alaska, the end of evening civil twilight and the beginning of morning civil twilight, as defined for each locality.

**SUPER HIGH FREQUENCY/SHF—**The frequency band between 3 and 30 gigahertz (gHz). The elevation and azimuth stations of the microwave landing system operate from 5031MHz to 5091MHz in this spectrum.

**SURVEILLANCE APPROACH—** An instrument approach wherein the air traffic controller issues instructions, for pilot compliance, based on aircraft position in relation to the final approach course (azimuth), and the distance (range) from the end of the runway as displayed on the controller's radar scope. The controller will provide recommended altitudes on final approach if requested by the pilot. (See PAR Approach) (Refer to AIM)

**SYSTEM STRATEGIC NAVIGATION (SN)—** Military activity accomplished by navigating along a preplanned route using internal aircraft systems to maintain a desired track. This activity normally requires a lateral route width of 10NM and altitude range of 1,000 feet to 6,000 feet AGL with some route segments that permit terrain following.

**TACAN-ONLY AIRCRAFT—** An aircraft, normally military, possessing TACAN with DME but no VOR navigational system capability. Clearances must specify TACAN or VORTAC fixes and approaches.

**TACTICAL AIR NAVIGATION/TACAN—** An ultrahigh frequency electronic rho-theta air navigation aid which provides suitably equipped aircraft a continuous indication of bearing and distance to the TACAN station. (See VORTAC) (Refer to AIM)

**TARGET—** The indication shown on a radar display resulting from a primary radar return or a radar beacon reply. (See Radar, Target Symbol)

*ICAO—TARGET—*In radar:

1. Generally, any discrete object which reflects or retransmits energy back to the radar equipment.
2. Specifically, an object of radar search or surveillance.

**TARGET SYMBOL—** A computer-generated indication shown on a radar display resulting from a primary radar return or a radar beacon reply.

**TAXI—** The movement of an airplane under its own power on the surface of an airport (FAR Part 135.100-Note). Also, it describes the surface movement of helicopters equipped with wheels. (See Air Taxi, Hover Taxi) (Refer to AIM)

***TAXI INTO POSITION AND HOLD—*** Used by ATC to inform a pilot to taxi onto the departure runway in takeoff position and hold. It is not authorization for takeoff. It is used when takeoff clearance cannot immediately be issued because of traffic or other reasons. (See Hold, Cleared for Takeoff)

**TAXI PATTERNS—** Patterns established to illustrate the desired flow of ground traffic for the different runways or airport areas available for use.

**TERMINAL AREA—** A general term used to describe airspace in which approach control service or airport traffic control service is provided.

**TERMINAL AREA FACILITY—** A facility providing air traffic control service for arriving and departing IFR, VFR, Special VFR, and on occasion en route aircraft. (See Approach Control, Tower)

**TERMINAL CONTROL AREA—** (See Controlled Airspace)

**TERMINAL RADAR PROGRAM—** A national program instituted to extend the terminal radar services provided IFR aircraft to VFR aircraft. Pilot participation in the program is urged but is not mandatory. The program is divided into two parts and referred to as Stage II and Stage III. The Stage service provided at a particular location is contained in the Airport/Facility Directory.

1. Stage I originally comprised two basic radar services (traffic advisories and limited vectoring to VFR aircraft). These services are provided by all commissioned terminal radar facilities, but the term "Stage I" has been deleted from use.
2. Stage II/Radar Advisory and Sequencing for VFR Aircraft—Provides, in addition to the basic radar services, vectoring and sequencing on a full-time basis to arriving VFR aircraft. The purpose is to adjust the flow of arriving IFR and VFR aircraft into the traffic pattern in a safe and orderly manner and to provide traffic advisories to departing VFR aircraft.
3. Stage III/Radar Sequencing and Separation Service for VFR Aircraft—Provides, in addition to the basic radar services and Stage II, separation be-

tween all participating VFR aircraft. The purpose is to provide separation between all participating VFR aircraft and all IFR aircraft operating within the airspace defined as a Terminal Radar Service Area (TRSA) or Terminal Control Area (TCA). (See Controlled Airspace, Terminal Radar Service Area) (Refer to AIM, Airport/Facility Directory)

**TERMINAL RADAR SERVICE AREA/TRSA—** Airspace surrounding designated airports wherein ATC provides radar vectoring, sequencing, and separation on a full-time basis for all IFR and participating VFR aircraft. Service provided in a TRSA is called Stage III Service. The AIM contains an explanation of TRSA. TRSA's are depicted on VFR aeronautical charts. Pilot participation is urged but is not mandatory. (See Terminal Radar Program) (Refer to AIM, Airport/Facility Directory)

**TERRAIN FOLLOWING/TF—** The flight of a military aircraft maintaining a constant AGL altitude above the terrain or the highest obstruction. The altitude of the aircraft will constantly change with the varying terrain and/or obstruction.

**TETRAHEDRON—** A device normally located on uncontrolled airports and used as a landing direction indicator. The small end of a tetrahedron points in the direction of landing. At controlled airports, the tetrahedron, if installed, should be disregarded because tower instructions supersede the indicator. (See Segmented Circle) (Refer to AIM)

***THAT IS CORRECT—*** The understanding you have is right.

**THRESHOLD—** The beginning of that portion of the runway usable for landing. (See Airport Lighting, Displaced Threshold)

**THRESHOLD CROSSING HEIGHT/TCH—** The theoretical height above the runway threshold at which the aircraft's glideslope antenna would be if the aircraft maintains the trajectory established by the mean ILS glideslope or MLS glidepath. (See Glide Slope, Threshold)

**THRESHOLD LIGHTS—** (See Airport Lighting)

**TIME GROUP—** Four digits representing the hour and minutes from the 24-hour clock. Time groups without time zone indicators are understood to be UTC (Coordinated Universal Time); e.g., "0205." The term "Zulu" is used when ATC procedures require a reference to UTC. A time zone designator is used to indicate local time; e.g., "0205M." The end and the beginning of the day are shown by "2400" and "0000," respectively.

**TORCHING—** The burning of fuel at the end of an exhaust pipe or stack of a reciprocating aircraft engine, the result of an excessive richness in the fuel air mixture.

*ICAO—TOTAL ESTIMATED ELAPSED TIME/ TOTAL EET—*For IFR flights, the estimated time required from takeoff to arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or if no navigation aid is associated with the destination aerodrome, to arrive over the destination aerodrome. For VFR flights, the estimated time required from takeoff to arrive over the destination aerodrome (for use in international flight planning). (See Estimated Elapsed Time)

**TOUCH-AND-GO/TOUCH-AND-GO LANDING—** An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway.

**TOUCHDOWN—**

1. The point at which an aircraft first makes contact with the landing surface.
2. Concerning a precision radar approach (PAR), it is the point where the glide path intercepts the landing surface.

*ICAO—TOUCHDOWN—* The point where the nominal glide path intercepts the runway.

**TOUCHDOWN RVR—** (See Visibility)

**TOUCHDOWN ZONE—** The first 3,000 feet of the runway beginning at the threshold. The area is used for determination of Touchdown Zone Elevation in the development of straight-in landing minimums for instrument approaches.

**TOUCHDOWN ZONE ELEVATION/TDZE—** The highest elevation in the first 3,000 feet of the landing surface. TDZE is indicated on the instrument approach procedure chart when straight-in landing minimums are authorized. (See Touchdown Zone)

**TOUCHDOWN ZONE LIGHTING—** (See Airport Lighting)

**TOWER/AIRPORT TRAFFIC CONTROL TOWER—** A terminal facility that uses air/ground communications, visual signaling, and other devices to provide ATC services to aircraft operating in the vicinity of an airport or on the movement area. Authorizes aircraft to land or takeoff at the airport controlled by the tower or to transit the airport traffic area regardless of flight plan or weather conditions (IFR or VFR). A tower may also provide approach control services (radar or nonradar). (See Airport Traffic Area, Airport Traffic Control Service, Approach Control/Approach Control Facility, Approach Control Service, Movement Area, Tower En Route Control Service/Tower to Tower) (Refer to AIM)

*ICAO—AERODROME CONTROL TOWER—* A unit established to provide air traffc control service to aerodrome traffic.

**TOWER EN ROUTE CONTROL SERVICE/TOWER TO TOWER—** The control of IFR en route traffic within delegated airspace between two or more adjacent approach control facilities. This service is designed to expedite traffic and reduce control and pilot communication requirements.

**TPX-42—** A numeric beacon decoder equipment/ system. It is designed to be added to terminal radar systems for beacon decoding. It provides rapid target identification, reinforcement of the primary radar target, and altitude information from Mode C. (See Automated Radar Terminal Systems, Transponder)

**TRACK—** The actual flight path of an aircraft over the surface of the earth. (See Course, Route, Flight Path)

*ICAO—TRACK*—The projection on the earth's surface of the path of an aircraft, the direction of which path at any point is usually expressed in degrees from north (true, magnetic, or grid).

**TRAFFIC—**

1. A term used by a controller to transfer radar identification of an aircraft to another controller for the purpose of coordinating separation action. Traffic is normally issued (a) in response to a handoff or point out, (b) in anticipation of a handoff or point out, or (c) in conjunction with a request for control of an aircraft.
2. A term used by ATC to refer to one or more aircraft.

**TRAFFIC ADVISORIES—** Advisories issued to alert pilots to other known or observed air traffic which may be in such proximity to the position or intended route of flight of their aircraft to warrant their attention. Such advisories may be based on:

1. Visual observation.
2. Observation of radar identified and nonidentified aircraft targets on an ATC radar display, or
3. Verbal reports from pilots or other facilities.

The word "traffic" followed by additional information, if known, is used to provide such advisories; e.g., "Traffic, 2 o'clock, one zero miles, southbound, eight thousand."

Traffic advisory service will be provided to the extent possible depending on higher priority duties of the controller or other limitations; e.g., radar limitations, volume of traffic, frequency congestion, or controller workload. Radar/nonradar traffic advisories do not relieve the pilot of his responsibility to see and avoid other aircraft. Pilots are cautioned that there are many times when the controller is not able to give traffic advisories concerning all traffic in the aircraft's proximity; in other words, when a pilot requests or is receiving traffic advisories, he should not assume that all traffic will be issued. (Refer to AIM, Radar Traffic Information Service)

***(identification), TRAFFIC ALERT. ADVISE YOU TURN LEFT/RIGHT (specific heading if appropriate), AND/OR CLIMB/DESCEND (specific altitude if appropriate) IMMEDIATELY.*** (See Safety Alert)

**TRAFFIC INFORMATION—** (See Traffic Advisories)

***TRAFFIC IN SIGHT—*** Used by pilots to inform a controller that previously issued traffic is in sight. (See Negative Contact, Traffic Advisories)

***TRAFFIC NO LONGER A FACTOR—*** Indicates that the traffic described in a previously issued traffic advisory is no longer a factor.

**TRAFFIC PATTERN—** The traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from an airport. The components of a typical traffic pattern are upwind leg, crosswind leg, downwind leg, base leg, and final approach.

1. Upwind Leg—A flight path parallel to the landing runway in the direction of landing.
2. Crosswind Leg—A flight path at right angles to the landing runway off its upwind end.
3. Downwind Leg—A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg.
4. Base Leg—A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline.
5. Final Approach—A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. An aircraft making a straight-in approach VFR is also considered to be on final approach.

(See Straight-In Approach-VFR, Taxi Patterns) (Refer to AIM, FAR Part 91)

*ICAO—AERODROME TRAFFIC CIRCUIT—* The specified path to be flown by aircraft operating in the vicinity of an aerodrome.

**TRANSCRIBED WEATHER BROADCAST/TWEB—** A continuous recording of meteorological and aeronautical information that is broadcast on L/MF and VOR facilities for pilots. (Refer to AIM)

**TRANSFER OF CONTROL—** That action whereby the responsibility for the separation of an aircraft is transferred from one controller to another.

*ICAO—TRANSFER OF CONTROL—* Transfer of responsibility for providing air traffic control service.

**TRANSFERRING CONTROLLER/FACILITY—** A controller/facility transferring control of an aircraft to another controller/facility.

*ICAO—TRANSFERRING UNIT/CONTROLLER—* Air Traffic Control Unit/Air Traffic Controller in the process of transferring the responsibility for providing air traffic control service to an aircraft to the next air traffic control unit/air traffic controller along the route of flight.

**TRANSITION—**

1. The general term that describes the change from one phase of flight or flight condition to another; e.g., transition from en route flight to the approach or transition from instrument flight to visual flight.
2. A published procedure (SID Transition) used to connect the basic SID to one of several en route airways/jet routes, or a published procedure (STAR Transition) used to connect one of several en route airways/jet routes to the basic STAR. (Refer to SID/STAR Charts)

**TRANSITION AREA—** (See Controlled Airspace)

**TRANSMISSOMETER—** An apparatus used to determine visibility by measuring the transmission of light through the atmosphere. It is the measurement source for determining runway visual range (RVR) and runway visibility value (RVV). (See Visibility)

***TRANSMITTING IN THE BLIND/BLIND TRANSMISSION—*** A transmission from one station to other stations in circumstances where two-way communication cannot be established, but where it is believed that the called stations may be able to receive the transmission.

**TRANSPONDER—** The airborne radar beacon receiver/transmitter portion of the Air Traffic Control Radar Beacon System (ATCRBS) which automatically receives radio signals from interrogators on the ground, and selectively replies with a specific reply pulse or pulse group only to those interrogations being received on the mode to which it is set to respond. (See Interrogator) (Refer to AIM)

*ICAO—TRANSPONDER—*A receiver/transmitter which will generate a reply signal upon proper interrogation; the interrogation and reply being on different frequencies.

**TURBOJET AIRCRAFT—** An aircraft having a jet engine in which the energy of the jet operates a turbine which in turn operates the air compressor.

**TURBOPROP AIRCRAFT—** An aircraft having a jet engine in which the energy of the jet operates a turbine which drives the propeller.

**T-VOR/TERMINAL-VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION—** A very high frequency terminal omnirange station located on or near an airport and used as an approach aid. (See Navigational Aid, VOR)

**TWO WAY RADIO COMMUNICATIONS FAILURE—** (See Lost Communications)

**ULTRAHIGH FREQUENCY/UHF—** The frequency band between 300 and 3,000 MHz. The bank of radio frequencies used for military air/ground voice communications. In some instances this may go as low as 225 MHz and still be referred to as UHF.

**ULTRALIGHT VEHICLE—** An aeronautical vehicle operated for sport or recreational purposes which does not require FAA registration, an airworthiness certificate, nor pilot certification. They are primarily single occupant vehicles, although some two-place vehicles are authorized for training purposes. Operation of an ultralight vehicle in certain airspace requires authorization from ATC. (See FAR 103)

***UNABLE—*** Indicates inability to comply with a specific instruction, request, or clearance.

**UNCONTROLLED AIRSPACE—** Uncontrolled airspace is that portion of the airspace that has not been designated as continental control area, control area, control zone, terminal control area, or transition area and within which ATC has neither the authority nor the responsibility for exercising control over air traffic. (See Controlled Airspace)

**UNDER THE HOOD—** Indicates that the pilot is using a hood to restrict visibility outside the cockpit while simulating instrument flight. An appropriately rated pilot is required in the other control seat while this operation is being conducted. (Refer to FAR, Part 91)

**UNICOM—** A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOMs are shown on aeronautical charts and publications. (Refer to AIM, Airport/Facility Directory)

**UNPUBLISHED ROUTE—** A route for which no minimum altitude is published or charted for pilot use. It may include a direct route between NAVAIDS, a radial, a radar vector, or a final approach course beyond the segments of an instrument approach procedure. (See Published Route, Route)

**UPWIND LEG—** (See Traffic Pattern)

**URGENCY—** A condition of being concerned about safety, and of requiring timely but not immediate assistance; a potential Distress condition.

*ICAO—URGENCY—* A condition concerning the safety of an aircraft or other vehicle, or of person on board or in sight, but which does not require immediate assistance.

**VECTOR—** A heading issued to an aircraft to provide navigational guidance by radar.

*ICAO—RADAR VECTORING—* Provision of navigational guidance to aircraft in the form of specific headings, based on the use of radar.

***VERIFY—*** Request confirmation of information; e.g., "verify assigned altitude."

***VERIFY SPECIFIC DIRECTION OF TAKEOFF (OR TURNS AFTER TAKEOFF)—*** Used by ATC to ascertain an aircraft's direction of takeoff and/or direction of turn after takeoff. It is normally used for IFR departures from an airport not having a control tower. When direct communication with the pilot is not possible, the request and information may be relayed through an FSS, dispatcher, or by other means. (See IFR Takeoff Minimums and Departure Procedures)

**VERTICAL SEPARATION—** Separation established by assignment of different altitudes or flight levels. (See Separation)

*ICAO—VERTICAL SEPARATION—*Separation between aircraft expressed in units of vertical distance.

**VERTICAL TAKEOFF AND LANDING AIRCRAFT/VTOL AIRCRAFT—** Aircraft capable of vertical climbs and/or descents and of using very short runways or small areas for takeoff and landings. These aircraft include, but are not limited to, helicopters. (See Short Takeoff and Landing Aircraft)

**VERY HIGH FREQUENCY/VHF—** The frequency band between 30 and 300 MHz. Portions of this band, 108 to 118 MHz, are used for certain NAVAIDS; 118 to 136 MHz are used for civil air/ground voice communications. Other frequencies in this band are used for purposes not related to air traffic control.

**VERY LOW FREQUENCY/VLF—** The frequency band between 3 and 30 kHz.

**VFR AIRCRAFT/VFR FLIGHT—** An aircraft conducting flight in accordance with visual flight rules. (See Visual Flight Rules)

***VFR CONDITIONS—*** Weather conditions equal to or better than the minimum for flight under visual flight rules. The term may be used as an ATC clearance/instruction only when:

1. An IFR aircraft requests a climb/descent in VFR conditions.
2. The clearance will result in noise abatement benefits where part of the IFR departure route does not conform to an FAA approved noise abatement route or altitude.
3. A pilot has requested a practice instrument approach and is not on an IFR flight plan.

All pilots receiving this authorization must comply with the VFR visibility and distance from cloud criteria in FAR Part 91. Use of the term does not relieve controllers of their responsibility to separate aircraft in TCAs/TRSAs as required by FAA Handbook 7110.65. When used as an ATC clearance/instruction, the term may be abbreviated "VFR;" e.g., "MAINTAIN VFR," "CLIMB/DESCEND VFR," etc.

***VFR-ON-TOP—*** ATC authorization for an IFR aircraft to operate in VFR conditions at any appropriate VFR altitude (as specified in FAR and as restricted by ATC). A pilot receiving this authorization must comply with the VFR visibility, distance from cloud criteria, and the minimum IFR altitudes specified in FAR Part 91. The use of this term does not relieve controllers of their responsibility to separate aircraft in TCAs/TRSAs as required by FAA Handbook 7110.65.

**VFR MILITARY TRAINING ROUTES (VR)—** Routes used by the Department of Defense and associated Reserve and Air Guard units for the purpose of conducting low-altitude navigation and tactical training under VFR below 10,000 feet MSL at airspeeds in excess of 250 knots IAS.

***VFR NOT RECOMMENDED—*** An advisory provided by a flight service station to a pilot during a preflight or inflight weather briefing that flight under visual flight rules is not recommended. To be given when the current and/or forecasted weather conditions are at or below VFR minimums. It does not abrogate the pilot's authority to make his own decision.

**VIDEO MAP—** An electronically displayed map on the radar display that may depict data such as airports, heliports, runway centerline extensions, hospital emergency landing areas, NAVAIDS and fixes, reporting points, airway/route centerlines, boundaries, handoff points, special use tracks, obstructions, prominent geographic features, map alignment indicators, range accuracy marks, minimum vectoring altitudes.

**VISIBILITY—** The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night. Visbility is reported as statute miles, hundreds of feet or meters. (Refer to FAR Part 91, AIM)

1. Flight Visibility—The average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent unlighted objects may be seen and identified by day and prominent lighted objects may be seen and identified by night.

*ICAO—Flight Visibility*—The visibility forward from the cockpit of an aircraft in flight.

2. Ground Visibility—Prevailing horizontal visibility near the earth's surface as reported by the United States National Weather Service or an accredited observer.

*ICAO—Ground Visibility*—The visibility at an aerodrome as reported by an accredited observer.

3. Prevailing Visibility—The greatest horizontal visibility equaled or exceeded throughout at least half the horizon circle which need not necessarily be continuous.
4. Runway Visibility Value/RVV—The visibility determined for a particular runway by a transmissometer. A meter provides a continuous indication of the visibility (reported in miles or fractions of miles) for the runway. RVV is used in lieu of prevailing visibility in determining minimums for a particular runway.
5. Runway Visual Range/RVR—An instrumentally derived value, based on standard calibrations, that represents the horizontal distance a pilot will see down the runway from the approach end. It is based on the sighting of either high intensity runway lights or on the visual contrast of other targets whichever yields the greater visual range. RVR, in contrast to prevailing or runway visibility, is based on what a pilot in a moving aircraft should see looking down the runway. RVR is horizontal visual range, not slant visual range. It is based on the measurement of a transmissometer made near the touchdown point of the instrument runway and is reported in hundreds of feet. RVR is used in lieu of RVV and/or prevailing visibility in determining minimums for a particular runway.
    a. Touchdown RVR—The RVR visibility readout values obtained from RVR equipment serving the runway touchdown zone.
    b. MID RVR—The RVR readout values obtained from RVR equipment located midfield of the runway.
    c. Rollout RVR—The RVR readout values obtained from RVR equipment located nearest the rollout end of the runway.

*ICAO—Runway Visual Range*—The maximum distance in the direction of takeoff or landing at which the runway or the specified lights or markers delineating it can be seen from a position above a specified point on its centerline at a height corresponding to the average eye-level of pilots at touchdown.

**VISUAL APPROACH—** An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

*ICAO—VISUAL APPROACH—*An approach by an IFR flight when either part or all of an instrument approach procedure is not completed and the approach is executed in visual reference to terrain.

**VISUAL APPROACH SLOPE INDICATOR—** (See Airport Lighting)

**VISUAL DESCENT POINT/VDP—** A defined point on the final approach course of a nonprecision straight-in approach procedure from which normal descent from the MDA to the runway touchdown point may be commenced, provided the approach threshold of that runway, or approach lights, or other markings identifiable with the approach end of that runway are clearly visible to the pilot.

**VISUAL FLIGHT RULES/VFR—** Rules that govern the procedures for conducting flight under visual conditions. The term "VFR" is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan. (See Instrument Flight Rules, Instrument Meteorological Conditions, Visual Meteorological Conditions) (Refer to FAR, Part 91 and AIM)

**VISUAL HOLDING—** The holding of aircraft at selected, prominent geographical fixes which can be easily recognized from the air. (See Hold, Holding Fixes)

**VISUAL METEOROLOGICAL CONDITIONS/VMC—** Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling equal to or better than specified minima. (See Instrument Flight Rules, Instrument Meteorological Conditions, Visual Flight Rules)

**VISUAL SEPARATION—** A means employed by ATC to separate aircraft in terminal areas. There are two ways to effect this separation:

1. The tower controller sees the aircraft involved and issues instructions, as necessary, to ensure that the aircraft avoid each other.
2. A pilot sees the other aircraft involved and upon instructions from the controller provides his own separation by maneuvering his aircraft as necessary to avoid it. This may involve following another aircraft or keeping it in sight until it is no longer a factor. (See See and Avoid) (Refer to FAR, Part 91)

**VORTAC/VHF OMNIDIRECTIONAL RANGE/TACTICAL AIR NAVIGATION—** A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance measuring equipment (DME) at one site. (See Distance Measuring Equipment, Navigational Aid TACAN, VOR) (Refer to AIM)

**VORTICES/WING TIP VORTICES—** Circular patterns of air created by the movement of an airfoil through the air when generating lift. As an airfoil moves through the atmosphere in sustained flight, an area of area of low pressure is created above it. The air flowing from the high pressure area to the low pressure area around and about the tips of the airfoil tends to roll up into two rapidly rotating vortices, cylindrical in shape. These vortices are the most predominant parts of aircraft wake turbulence and their rotational force is dependent upon the wing loading, gross weight, and speed of the generating aircraft. The vortices from medium to heavy aircraft can be of extremely high velocity and hazardous to smaller aircraft. (See Aircraft Classes Wake Turbulence) (Refer to AIM)

**VOR/VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION—** A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the National Airspace System. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature. Voice features may be used by ATC or FSS for transmitting instructions/information to pilots. (See Navigational Aid) (Refer to AIM)

**VOT/VOR TEST SIGNAL—** A ground facility which emits a test signal to check VOR receiver accuracy. Some VOT's are available to the user while airborne, and others are limited to ground use only. (Refer to FAR, Part 91, AIM, Airport/Facility Directory)

**WAKE TURBULENCE—** Phenomena resulting from the passage of an aircraft through the atmosphere. The term includes vortices, thrust stream turbulence, jet blast, jet wash, propeller wash, and rotor wash both on the ground and in the air. (See Aircraft Classes, Jet Blast, Vortices) (Refer to AIM)

**WARNING AREA—** (See Special Use Airspace)

**WAYPOINT—** A predetermined geographical position used for route/instrument approach definition, or progress reporting purposes, that is defined relative to a VORTAC station or in terms of latitude/longitude coordinates.

**WEATHER ADVISORY/INFLIGHT WEATHER ADVISORY—** (See SIGMET, AIRMET)

**WEATHER ADVISORY/WS/WST/WA/CWA—** In aviation weather forecast practice, an expression of hazardous weather conditions not predicted in the area forecast, as they affect the operation of air traffic and as prepared by the NWS.

***WHEN ABLE—*** When used in conjunction with ATC instructions, gives the pilot the latitude to delay compliance until a condition or event has been reconciled. Unlike "pilot discretion," when instructions are prefaced "when able," the pilot is expected to seek the first opportunity to comply. Once a maneuver has been initiated, the pilot is expected to continue until the specifications of the instructions have been met. "When able," should not be used when expeditious compliance is required.

***WILCO—*** I have received your message, understand it, and will comply with it.

**WIND SHEAR—** A change in wind speed and/or wind direction in a short distance resulting in a tearing or shearing effect. It can exist in a horizontal or vertical direction and occasionally in both.

**WORDS TWICE—**

1. As a request: "Communication is difficult. Please say every phrase twice."
2. As information: "Since communications are difficult, every phrase in this message will be spoken twice."

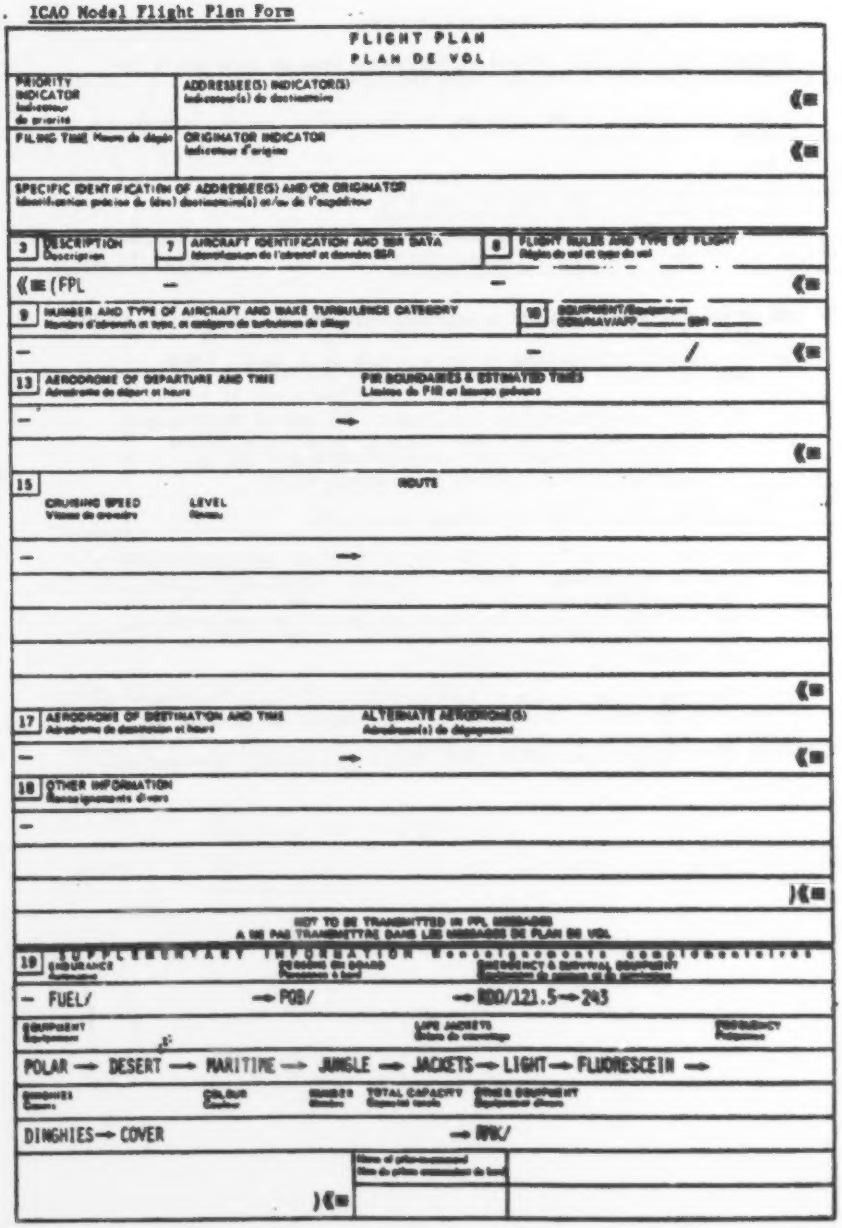
[illegible]

[illegible]

# APPENDIX B

## ICAO FLIGHT PLANS

1. ICAO Model Flight Plan Form



FLIGHT PLAN
PLAN DE VOL

PRIORITY INDICATOR
Indicateur de priorité

ADDRESSEE(S) INDICATOR(S)
Indicateur(s) de destinataire «≡

FILING TIME Heure de dépôt

ORIGINATOR INDICATOR
Indicateur d'origine «≡

SPECIFIC IDENTIFICATION OF ADDRESSEE(S) AND/OR ORIGINATOR

3 DESCRIPTION
Description

7 AIRCRAFT IDENTIFICATION AND SSR DATA

8 FLIGHT RULES AND TYPE OF FLIGHT
Règles de vol et type de vol

«≡(FPL — — «≡

9 NUMBER AND TYPE OF AIRCRAFT AND WAKE TURBULENCE CATEGORY

10 EQUIPMENT/Equipement
COM/NAV/APP ______ SSR ______

— — / «≡

13 AERODROME OF DEPARTURE AND TIME
Aérodrome de départ et heure

FIR BOUNDARIES & ESTIMATED TIMES
Limites de FIR et heures prévues

— →

«≡

15 ROUTE

CRUISING SPEED
Vitesse de croisière

LEVEL
Niveau

— →

«≡

17 AERODROME OF DESTINATION AND TIME
Aérodrome de destination et heure

ALTERNATE AERODROME(S)
Aérodrome(s) de dégagement

— → «≡

18 OTHER INFORMATION
Renseignements divers

—

)«≡

NOT TO BE TRANSMITTED IN FPL MESSAGES
A NE PAS TRANSMETTRE DANS LES MESSAGES DE PLAN DE VOL

19 SUPPLEMENTARY INFORMATION Renseignements complémentaires

ENDURANCE
Autonomie

PERSONS ON BOARD
Personnes à bord

EMERGENCY & SURVIVAL EQUIPMENT

— FUEL/ → POB/ → RDO/121.5 → 243

EQUIPMENT
Equipement

LIFE JACKETS
Gilets de sauvetage

FREQUENCY
Fréquence

POLAR → DESERT → MARITIME → JUNGLE → JACKETS → LIGHT → FLUORESCEIN →

DINGHIES
Canots

COLOUR
Couleur

NUMBER
Nombre

TOTAL CAPACITY
Capacité totale

OTHER EQUIPMENT
Equipement divers

DINGHIES → COVER → RMK/

)«≡

## 2. Instructions for the Completion of the Flight Plan Form

### 2.1 General

Adhere closely to the prescribed formats and manner of specifying data.

Insert all clock times in 4 Figures GMT.

Shaded area preceding Item 3 - to be completed by ATS and COM services, unless the responsibility for originating flight plan messages has been delegated.

### 2.2 Instructions for insertion of ATS data

Complete Items 7 to 18 as indicated hereunder.

Complete also Item 19 as indicated hereunder, when so required by the appropriate ATS authority or when otherwise deemed necessary.

*Note.- Item numbers on the form are not consecutive, as they correspond to Field Type numbers in ATS messages.*

**ITEM 7: AIRCRAFT IDENTIFICATION AND SSR DATA**

**AIRCRAFT IDENTIFICATION (MAXIMUM 7 CHARACTERS)**

*INSERT* one of the following aircraft identifications, not exceeding 7 characters:

(a) the registration marking of the aircraft (e.g. EIAKO, 4XBCD, N2567GA) when:

(1) in radiotelephony the call sign to be used by the aircraft will consist of this identification alone (e.g. OOTEK), or preceded by the ICAO telephony designator for the aircraft operating agency (e.g. SABENA OOTEK);

(2) the aircraft is not equipped with radio;

*OR* (b) the ICAO two-letter designator for the aircraft operating agency followed by the flight number (e.g. KL511, WT213, KU123, JH25) when in radiotelephony the call sign to be used by the aircraft will consist of the ICAO telephony designator for the operating agency followed by the flight number (e.g. KLM511, NIGERIA 213, KILO UNIFORM 123, JULIETT HOTEL 25).

*Note.- Provisions for the use of radiotelephony call signs are contained in Annex 10, Volume II, Chapter 5. ICAO two-letter designators and telephony designators for aircraft operating agencies are contained in Doc 8585,* Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.

### SSR DATA (5 CHARACTERS)

*INSERT* if a discrete SSR Code has been assigned to the aircraft or the flight, an oblique stroke followed by 1 letter giving the SSR Mode followed by 4 numerics giving the assigned SSR Code.

## ITEM 8: FLIGHT RULES AND TYPE OF FLIGHT (ONE OR TWO CHARACTERS)

### FLIGHT RULES

*INSERT* one of the following letters to denote the category of flight rules with which the pilot intends to comply:

I if IFR
V if VFR
Y if IFR first ) and specify in Item 15 the point where
Z if VFR first ) the change of flight rules is planned.

### TYPE OF FLIGHT

*INSERT* one of the following letters to denote the type of flight when so required by the appropriate ATS authority:

S if Scheduled Air Transport
N if Non-scheduled Air Transport
G if General Aviation
M if Military
X if Other than any of the defined categories above

## ITEM 9: NUMBER AND TYPE OF AIRCRAFT AND WAKE TURBULENCE CATEGORY

### NUMBER OF AIRCRAFT (1 OR 2 CHARACTERS)

*INSERT* the number of aircraft, if more than one

### TYPE OF AIRCRAFT (2 TO 4 CHARACTERS)

*INSERT* the appropriate designator as specified in ICAO Doc 8643, *Aircraft Type Designators*,

*OR,* if no such designator has been assigned, or in case of formation flights comprising more than one type,

*INSERT* ZZZZ, and *SPECIFY* in Item 18, the (numbers and) type(s) of aircraft preceded by TYP/

## WAKE TURBULENCE CATEGORY (1 CHARACTER)

*INSERT* an oblique stroke followed by one of the following letters to indicate the wake turbulence category of the aircraft:

H - HEAVY, to indicate an aircraft type with a maximum certificated take-off weight of 136 000 kg (300 000 lb) or more;

M - MEDIUM, to indicate an aircraft type with a maximum certificated take-off weight of less than 136 000 kg (300 000 lb) but more than 7 000 kg (15 500 lb);

L - LIGHT, to indicate an aircraft type with a maximum certificated take-off weight of 7 000 kg (15 500 lb) or less.

## ITEM 10: EQUIPMENT

### RADIO COMMUNICATION, NAVIGATION AND APPROACH AID EQUIPMENT

*INSERT* one letter as follows:
N if no COM/NAV/approach aid equipment for the route to be flown is carried, or the equipment is unserviceable,

*OR* S if standard COM/NAV/approach aid equipment for the route to be flown is carried (*See Note 1*),

*AND/OR*

*INSERT* one or more of the following letters to indicate the COM/NAV/approach aid equipment available and serviceable:

| | |
|---|---|
| A | LORAN A |
| B | (Not allocated) |
| C | LORAN C |
| D | DME |
| E | Decca |
| F | ADF |
| G | (Not allocated) |
| H | HF RTF |
| I | Inertial Navigation |
| J | (Not allocated) |
| K | (Not allocated) |
| L | ILS |
| M | Omega |
| O | VOR |
| P | Doppler |
| Q | (Not allocated) |
| R | RNAV route equipment |
| T | TACAN |
| U | UHF RTF |
| V | VHF RTF |
| W | when prescribed by ATS |
| X | |
| Y | |
| Z | Other equipment carried (*See Note 2*). |

*Note 1.- Standard equipment is considered to be VHF RTF, ADF, VOR and ILS, unless another combination is prescribed by the appropriate ATS authority.*

*Note 2.- If the letter Z is used, specify in Item 18 the other equipment carried, preceded by COM/ and/or NAV/ , as appropriate.*

### SSR EQUIPMENT

*Note.- This item may be omitted for flights operating within areas where SSR is not used.*

*INSERT* one of the following to describe the serviceable SSR equipment carried:

N None
O Transponder - no coding
2 Transponder (2 digits) - 64 Codes - Mode A
4 Transponder (4 digits) - 4096 Codes - Mode A but no Mode C
C Transponder (4 digits) - 4096 Codes - Modes A and C

## ITEM 13: AERODROME OF DEPARTURE AND TIME, FIR BOUNDARIES AND ESTIMATED TIMES

### AERODROME OF DEPARTURE AND TIME (8 CHARACTERS)

*INSERT* the ICAO four-letter location indicator of the aerodrome of departure,

*OR,* if no location indicator has been assigned,

*INSERT* ZZZZ, and *SPECIFY*, in Item 18, the name of the aerodrome, preceded by DEP/

*OR,* if the flight plan is received from an aircraft in flight,

*INSERT* AFIL, and *SPECIFY*, in ITEM 18, the ICAO four-letter location indicator of the location of the ATS unit from which supplementary flight plan data can be obtained, preceded by DEP/

*THEN, WITHOUT A SPACE,*

*INSERT* for a flight plan submitted before departure, the estimated time of departure, that is, the time at which it is estimated that the aircraft will take off provided no delay is experienced,

*OR,* for a flight plan received from an aircraft in flight, the estimated time over the first point of the route to which the flight plan applies.

*THEN, FOLLOWING A SPACE,*

### FIR BOUNDARIES AND ESTIMATED TIMES (MULTIPLES OF 8 CHARACTERS)

Unless the appropriate ATS authority does not require this information,

*INSERT,* in sequence, estimates for each FIR boundary to be crossed. Each estimate shall consist of the ICAO four-letter location indicator of the ACC or FIC serving the FIR to be entered, followed, without a space, by the estimated time over the boundary. *SEPARATE* each estimate by a space.

## ITEM 15: ROUTE

*INSERT* the first cruising speed as in (a) and the first cruising level as in (b), without a space between them.

*THEN,* following the arrow, *INSERT* the route description as in (c).

### (a) CRUISING SPEED (4 CHARACTERS)

*INSERT* the True Air Speed in knots for the first or the whole cruising portion of the flight, in 4 figures (e.g. 0485).

*OR,* when so prescribed by the appropriate ATS authority for the first or whole portion of the route, the Mach Number to the nearest hundredths of unit Mach preceded by the letter M (e.g. M082).

### (b) CRUISING LEVEL (MAXIMUM 5 CHARACTERS)

*INSERT* the planned cruising level for the first or the whole portion of the route to be flown, in terms of:

Flight level, expressed as F followed by 3 figures (e.g. F085; F330);

*or*

* Standard Metric Level in tens of metres, expressed as S followed by 4 figures (e.g. S1130);

*or*

Altitude in hundreds of feet, expressed as A followed by 3 figures (e.g. A045; A100);

*or*

Altitude in tens of metres, expressed as M followed by 4 figures (e.g. M0840);

*or,*

for uncontrolled VFR flights, the letters VFR.

### (c) ROUTE (INCLUDING CHANGES OF SPEED, LEVEL OR FLIGHT RULES)

#### Flights along designated ATS routes

*INSERT* if the aerodrome of departure is located on the ATS route, the designator of the first ATS route.

*OR,* if the aerodrome of departure is not on the ATS route, the letters DCT followed by the point of joining the first ATS route, followed by the designator of the ATS route.

---

* When so prescribed by the appropriate ATS authorities.

*THEN*

*INSERT* each point at which either a change of speed or level, a change of route, and/or a change of flight rules is planned,

*FOLLOWED IN EACH CASE*

by the designator of the next ATS route segment, even if the same as the previous one,

*OR* by DCT, if the flight to the next point will be outside a designated route, unless both points are defined by geographical co-ordinates or by bearing and distance.

Flights outside designated ATS routes

*INSERT* points normally not more than 30 minutes flying time or 200 nautical miles apart, including each point at which a change of speed or level, a change of track, or a change of flight rules is planned.

*INSERT* DCT between successive points unless both points are defined by geographical co-ordinates or by bearing and distance.

*USE ONLY* the conventions in (1) to (5) below and *SEPARATE* each sub-item by a space.

(1) ATS ROUTE (2 TO 7 CHARACTERS)

The coded designator assigned to the route or route segment (e.g. B1, R14, UB10, TAWNY14)

(2) SIGNIFICANT POINT (2 TO 11 CHARACTERS)

The coded designator (2 to 5 characters) assigned to the point (e.g. LN, MAY, MADDY),

*or,*

if no coded designator has been assigned, one of the following ways:

- Degrees only (7 characters):

  2 figures describing latitude in degrees, followed by "N" (North) or "S" (South), followed by 3 figures describing longitude in degrees, followed by "E" (East) or "W" (West). Make up the correct number of figures, where necessary, by insertion of zeros, e.g. 46N078W.

- Degrees and minutes (11 characters):

  4 figures describing latitude in degrees and tens and units of minutes followed by "N" (North) or "S" (South), followed by 5 figures describing longitude in degrees and tens and units of minutes, followed by "E" (East) or "W" (West). Make up the correct number of figures, where necessary, by insertion of zeros, e.g. 4620N07805W.

Bearing and distance from a navigation aid:

The identification of the navigation aid (normally a VOR), in the form of 2 or 3 characters, *THEN* the bearing from the aid in the form of 3 figures giving degrees magnetic, *THEN* the distance from the aid in the form of 3 figures expressing nautical miles. Make up the correct number of figures, where necessary, by insertion of zeros - e.g. a point 180° magnetic at a distance of 40 nautical miles from VOR "DUB" should be expressed as DUB180040.

### (3) CHANGE OF SPEED OR LEVEL (MAXIMUM 21 CHARACTERS)

The point at which a change of speed (5% TAS or 0.01 Mach or more) or a change of level is planned, expressed exactly as in (2) above, followed by an oblique stroke and both the cruising speed and the cruising level, expressed exactly as in (a) and (b) above, without a space between them, even when only one of these quantities will be changed.

Examples: LN/0284A045
MAY/0305F180
HADDY/0420F330
4602N07805W/0500F350
46N078W/M082F330
DUB180040/0350M0840

### (4) CHANGE OF FLIGHT RULES (MAXIMUM 3 CHARACTERS)

The point at which the change of flight rules is planned, expressed exactly as in (2) or (3) above as appropriate, followed by a space and one of the following:

VFR if from IFR to VFR
IFR if from VFR to IFR

Examples: LN VFR
LN/0284 A050 IFR

### (5) CRUISE CLIMB (MAXIMUM 28 CHARACTERS)

The letter C followed by an oblique stroke; *THEN* the point at which cruise climb is planned to start, expressed exactly as in (2) above, followed by an oblique stroke; *THEN* the speed to be maintained during cruise climb, expressed exactly as in (a) above, followed by the two levels defining the layer to be occupied during cruise climb, each level expressed exactly as in (b) above, or the level above which cruise climb is planned followed by the letters PLUS, without a space between them.

Examples: C/48N050W/M082F290F350
C/48N050W/M082F290PLUS
C/52N050W/M220F580F620

## ITEM 17: AERODROME OF DESTINATION AND TIME, ALTERNATE AERODROME(S)

### AERODROME OF DESTINATION AND TIME (8 CHARACTERS)

*INSERT* the ICAO four-letter location indicator of the aerodrome of destination followed, without a space, by the estimated time of arrival,

*OR,* if no location indicator has been assigned to the aerodrome of destination,

*INSERT* ZZZZ followed, without a space, by the estimated time of arrival, and *SPECIFY* in Item 18 the name of the aerodrome, preceded by DEST/ .

*Note 1.- The term estimated time of arrival denotes the time at which it is estimated that the aircraft will land provided no delay is experienced. Calculation of the estimated time of arrival in the case of an IFR flight to an aerodrome served by one or more navigation aids is based on the average time required by the aircraft to complete an instrument approach procedure at the aerodrome.*

*Note 2.- If and where so prescribed, the estimated time over the appropriate designated navigation aid serving the aerodrome of intended landing is inserted in Item 18.*

### ALTERNATE AERODROME(S) (4 CHARACTERS)

*INSERT* the ICAO four-letter location indicator(s) of not more than two alternate aerodromes, separated by a space

*OR,* if no location indicator has been assigned to the alternate aerodrome.

*INSERT* ZZZZ and *SPECIFY* in Item 18 the name of the aerodrome, preceded by ALTN/ .

## ITEM 18: OTHER INFORMATION

*INSERT* 0 (zero) if no other information,

*OR* any other necessary information in the preferred sequence shown hereunder, in the form of the appropriate indicator followed by an oblique stroke and the information to be recorded:

| | |
|---|---|
| REG/ | The registration markings of the aircraft, if different from the aircraft identification in Item 7. |
| SEL/ | SELCAL Code, if so prescribed by the appropriate ATS authority. |
| OPR/ | Name of the operator, if not obvious from the aircraft identification in Item 7. |
| STS/ | Reason for special handling by ATS, e.g. hospital aircraft, one engine inoperative, e.g. STS/HOSP, STS/ONE ENG INOP. |

| | |
|---|---|
| TYP/ | Type(s) of aircraft, preceded if necessary by number(s) of aircraft, if ZZZZ is inserted in Item 9. |
| PER/ | Aircraft performance data, if so prescribed by the appropriate ATS authority. |
| COM/ | Any additional COM equipment carried, if the letter Z is inserted in Item 10. |
| NAV/ | Any additional NAV equipment, if the letter Z is inserted in Item 10. |
| DEP/ | Name of aerodrome of departure, if ZZZZ is inserted in Item 13, or the ICAO four-letter location indicator of the location of the ATS unit from which supplementary flight plan data can be obtained, if AFIL is inserted in Item 13. |
| EST/ | Significant points and estimated times over such points, when so prescribed on the basis of regional air navigation agreements or specified by the appropriate ATS authority. In each group of information, separate the point and the estimated time over the point by an oblique stroke, e.g. EST/CAP/1745 XYZ/1830.<br>*Note.- When the estimated times refer to geographical co-ordinates, use only the latitude or longitude, as appropriate, to identify the points, e.g.*<br>EST/60N/1540 55N/1613 50N/1648 *etc., or*<br>EST/10W/1025 20W/1105 30W/1145 *etc.* |
| DEST/ | Name of destination, if ZZZZ is inserted in Item 17. |
| ALTN/ | Name of alternate aerodrome(s), if ZZZZ is inserted in Item 17. |
| RMK/ | Any other plain language remarks when required by the appropriate ATS authority or deemed necessary. |

## ITEM 19: SUPPLEMENTARY INFORMATION

### ENDURANCE

After FUEL/ , *INSERT* a 4-figure group giving the fuel endurance in hours and minutes.

### PERSONS ON BOARD

After POB/ , *INSERT* the total number of persons (passengers + crew) on board, when required by the appropriate ATS authority.

### EMERGENCY AND SURVIVAL EQUIPMENT

RDO/ *CROSS OUT* any of the frequencies listed which are not available.

| | |
|---|---|
| EQUIPMENT | *CROSS OUT* any of the survival equipment listed which is not carried. |
| LIFE JACKETS | *CROSS OUT* all elements concerning life jackets if such jackets are not carried. *CROSS OUT* LIGHT if life jackets are not equipped with lights. *CROSS OUT* FLUORESCEIN if life jackets are not equipped with fluorescein. |
| FREQUENCY | *INSERT* RDO/ followed by transmitting/receiving frequencies of any life jacket radios carried. |
| DINGHIES | *CROSS OUT* both elements listed if dinghies are not carried. *CROSS OUT* COVER if dinghies are not covered. |
| COLOUR | *INSERT* colour of dinghies if carried. |
| NUMBER | *INSERT* number of dinghies carried. |
| TOTAL CAPACITY | *INSERT* total capacity, in persons, of all dinghies carried. |
| OTHER EQUIPMENT | *INDICATE* after RMK/ any other survival equipment carried and any other remarks regarding emergency and survival equipment. |

2.3 Name of pilot-in-command

*INSERT* the name of the pilot-in-command.

2.4 Acceptance of the flight plan

Indicate acceptance of the flight plan in the manner prescribed by the appropriate ATS authority.

2.5 Instructions for insertion of COM data

Items to be completed

*COMPLETE* the top two shaded lines of the form, and *COMPLETE* the third shaded line only when necessary, in accordance with the provisions in PANS-RAC, Part VIII, 2.1.2, unless ATS prescribes otherwise.

3. Instructions for the Transmission of a Filed Flight Plan (FPL) Message

Correction of obvious errors

Unless otherwise prescribed, *CORRECT* obvious format errors and/or omissions (i.e. oblique strokes) to ensure adherence as specified in Section 2.

Items to be transmitted

*TRANSMIT* items as indicated hereunder, unless otherwise prescribed:

(a) the items in the shaded lines, above Item 3;

(b) commencing with <<≡ (FPL of Item 3:

all symbols and data in the unshaded boxes down to the )<<≡ at the end of Item 18, additional alignment functions as necessary to prevent the inclusion of more than 69 characters in any line of Items 13, 15 or 18. The alignment function is to be inserted only in lieu of a space so as not to break up a group of data,

letter shifts and figure shifts (not preprinted on the form) as necessary;

(c) the AFTN Ending, as described below:

End-of-Text Signal

(a) one LETTER SHIFT
(b) two CARRIAGE RETURNS, one LINE FEED

Page-feed Sequence

Seven LINE FEEDS

End-of-Message Signal

Four of the letter N.

### Instructions for the Transmission of a Supplementary Flight Plan (SPL) Message

### Items to be transmitted

Transmit items as indicated hereunder, unless otherwise prescribed:

(a) AFTN Priority Indicator, Addressee Indicators <<≡, Filing Time, Originator Indicator <<≡ and, if necessary, specific identification of addressees and/or originator;

(b) commencing with <<≡ (SPL:

all symbols and data in the unshaded areas of boxes 7, 17 and 18, except that the ')' at the end of box 18 is not to be transmitted, and then the symbols in the unshaded area of box 19 down to and including the )<<≡ of box 19,

additional alignment functions as necessary to prevent the inclusion of more than 69 characters in any line of Items 18 and 19. The alignment function is to be inserted only in lieu of a space, so as not to break up a group of data,

letter shifts and figure shifts (not preprinted on the form) as necessary;

(c) the AFTN Ending, as described below:

End-of-Text Signal

(a) one LETTER SHIFT
(b) two CARRIAGE RETURNS, one LINE FEED

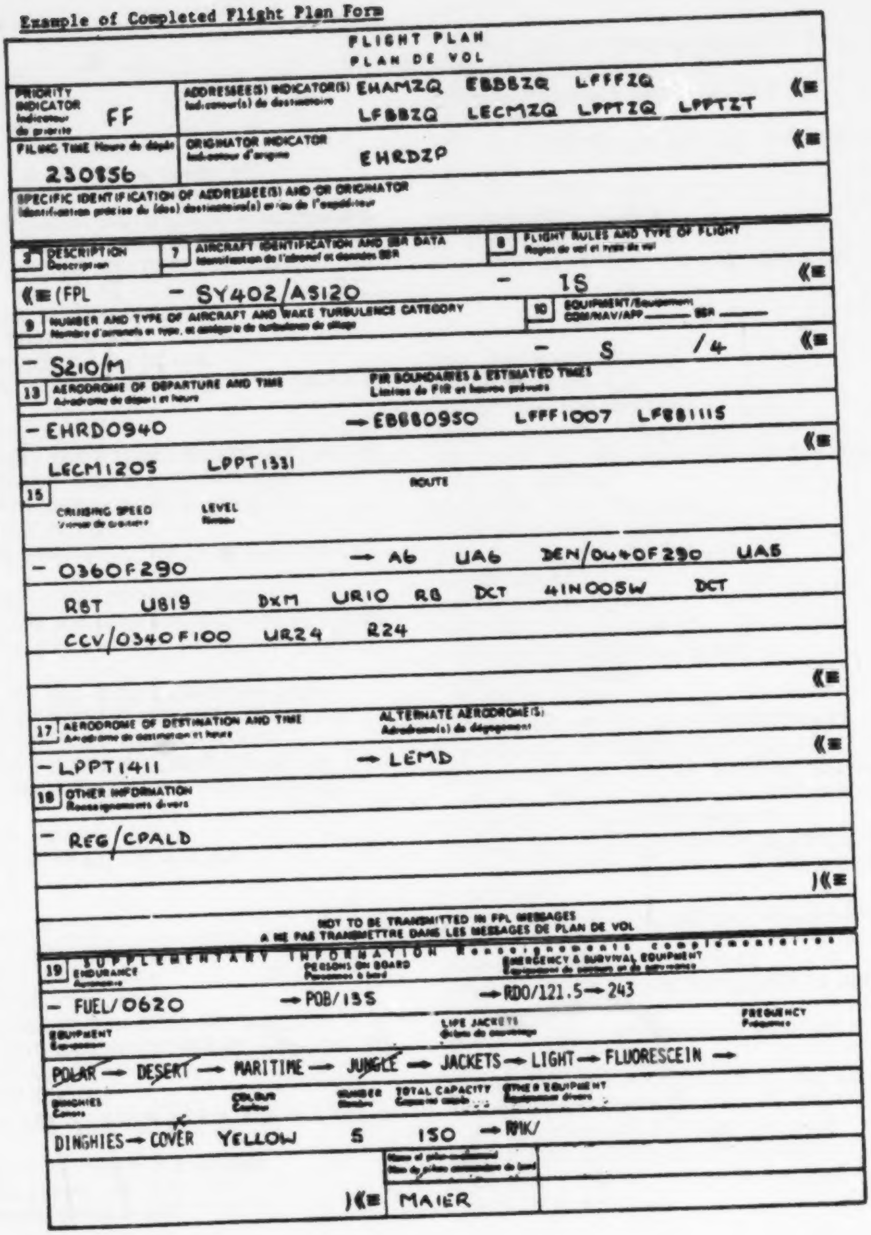
Page-feed Sequence

Seven LINE FEEDS

End-of-Message Signal

Four of the letter N.

5. Example of Completed Flight Plan Form



FLIGHT PLAN
PLAN DE VOL

PRIORITY INDICATOR Indicateur de priorité: FF

ADDRESSEE(S) INDICATOR(S) Indicateur(s) de destinataire: EHAMZQ EBBBZQ LFFFZQ LFBBZQ LECMZQ LPPTZQ LPPTZT «≡

FILING TIME Heure de dépôt: 230856

ORIGINATOR INDICATOR Indicateur d'origine: EHRDZP «≡

SPECIFIC IDENTIFICATION OF ADDRESSEE(S) AND OR ORIGINATOR

3 DESCRIPTION Description

7 AIRCRAFT IDENTIFICATION AND SSR DATA

8 FLIGHT RULES AND TYPE OF FLIGHT

«≡ (FPL - SY402/AS120 - IS «≡

9 NUMBER AND TYPE OF AIRCRAFT AND WAKE TURBULENCE CATEGORY

10 EQUIPMENT/Équipement COM/NAV/APP ——— SSR ———

- S210/M - S /4 «≡

13 AERODROME OF DEPARTURE AND TIME

FIR BOUNDARIES & ESTIMATED TIMES

- EHRD0940 → EBBB0950 LFFF1007 LFBB1115

LECM1205 LPPT1331 «≡

15 ROUTE

CRUISING SPEED

LEVEL

- 0360F290 → A6 UA6 DEN/0440F290 UA5

RBT UB19 DXM UR10 RB DCT 41N005W DCT

CCV/0340F100 UR24 R24

«≡

17 AERODROME OF DESTINATION AND TIME

ALTERNATE AERODROME(S)

- LPPT1411 → LEMD «≡

18 OTHER INFORMATION

- REG/CPALD

)«≡

NOT TO BE TRANSMITTED IN FPL MESSAGES
A NE PAS TRANSMETTRE DANS LES MESSAGES DE PLAN DE VOL

SUPPLEMENTARY INFORMATION Renseignements complémentaires

19 ENDURANCE

PERSONS ON BOARD

EMERGENCY & SURVIVAL EQUIPMENT

- FUEL/0620 → POB/135 → RDO/121.5 → 243

FREQUENCY

EQUIPMENT

LIFE JACKETS

~~POLAR~~ → ~~DESERT~~ → MARITIME → ~~JUNGLE~~ → JACKETS → LIGHT → FLUORESCEIN →

DINGHIES

COLOUR

NUMBER

TOTAL CAPACITY

OTHER EQUIPMENT

DINGHIES → COVER YELLOW 5 150 → RMK/

)«≡ MAIER

[illegible]

[illegible]

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